

A meta-study of teaching practitioner's conceptions of their work

A Dissertation  
SUBMITTED TO THE FACULTY OF  
UNIVERSITY OF MINNESOTA  
BY

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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY

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December 2014

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### **Acknowledgements**

So many have offered their support, help and friendship as I have traveled this path. While it is not possible to list everyone, there are a few I would like to particularly thank.

First and foremost I would like to acknowledge and thank my advisor, Professor Rosemarie Park. Your knowledge, thoughtfulness, flexibility, and patience have been critical in helping me accomplish this ever-daunting task. Thank you so much, RP.

I would also like to acknowledge and thank my dissertation committee members, Professor James Brown (committee chair), Dr. Catherine Twohig, and Professor Emeritus Karl Smith. Thank you all for your thoughtful assistance and continuing patience in helping me complete this paper and my degree.

In addition I would like to thank my father, Professor I. J. Pflug, for encouraging this form of study to further my understanding of the science of learning, towards fulfilling my desire to help others.

And finally, to my endlessly patient and tolerant husband who has been both a fellow student in the program and colleague on this journey. Thank you for traveling this path of discovery and remembrance with me. I am happy to have persevered with you on this often-daunting task.

**ABSTRACT**

It has been posited that meaning making around occupation both fuels pursuit, and guides vocational development as conceptions form. This dissertation investigates post-secondary teaching professionals conceptions of their vocation with the goal of highlighting possible occupational developmental pathways. Through a meta-study of several phenomenographys a holistic view of the profession emerged.

Utilizing existing findings from twelve contributing phenomenographic studies, sixty-one categories of description were gathered. These past findings provided the underpinning work conceptions of post secondary teaching professionals. These categories upon deconstruction into conceptions reveal different ways teaching practitioners could understand their vocation. Through an iterative process patterns of work meaning were sought by deconstructing, interpreting and synthesizing. A dynamic activity context of the vocation of post-secondary teaching emerged.

Patterns of interaction appear to link with the professional's teaching intention. This suggests that interactions can be a dynamic meditational tool utilized for promoting learning, yet flexible to support teaching practices in often changing circumstances.

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## **CHAPTER I**

### **INTRODUCTION**

#### **Background**

The goal of this study was to more deeply explore adult work development as a holistic construct. While work development has been examined from various perspectives, a call has been made to synthesize adult development threads, with the purpose of moving towards a holistic understanding of adult work development (Grenier & Kehrhahn, 2008; Herling & Provo, 2000; Kuchinke, 1997; Ollis, Macpherson, & Collins, 2006).

Kielhofner (2008) observes, "although a great deal of objective knowledge about performance capacity has been generated the subjective experience of performance has been largely neglected" (p. 74). As much of the research within work development disciplines is reductionistic, holistic first person ways of linking performance with individual development ought to be explicated. One such construct, emerging from doing, is individual constructed meaning.

Human development is the process of self-constructing, emerging out of experiences (Berieter & Scardamalia, 1993). What has been experienced underpins current interpretations that in turn set the stage for how the future is interpreted and experienced (Berieter & Scardamalia, 1993). Work development ought to be focused and informed by individual needs. To help adults perform as desired for work success, we ought to seek understanding of the emergent first person meanings that grow out of experiencing work and how these meanings relate to work performance. This understanding should point towards unexplored work development pathways.

Below is the rationale for emergent meaning as a way to discover development pathways for adults at work. The interdisciplinary approach here links the following fields: psychology (cognitive psychology, educational psychology, information systems, decision-making, artificial intelligence, human factors); human resource development, and occupational therapy and occupational studies.

### **Significance of the Problem**

Within human development, the significance of a research project is typically demonstrated by how it positively affects economic-based metrics such as organizational and individual effectiveness or efficiency. While these same contributions may be true here, this project reaches beyond the standard economic resource metrics. Instead, the focus is on how meaning-making positively affects well-being, resilience, and most significantly development pathways.

### **Well-being**

Humans are by nature “occupational” (Kielhofner, 1983, p. 12), with an “essential unity of mind and body [dynamically] acting on and in the world” (Kielhofner 1983, p.12, Slagle, E. C., 1922). Furthermore, “People are motivated to make meaning of what happens in their environments” (Baumeister & Vohs, 2002; Frankl, 1963, van den Heuvel; 2013, p. 62). Not just activities outside of work, “but also on the job” (Cash & Gray, 2000; van den Heuvel, 2013, p. 62). Schultz and Miller (2004) note that during stressful economic times, our friends, family and co-workers seek “meaning in their daily efforts” (p. 143). Researchers have acknowledged the importance of being able to experience meaning for optimal human functioning (e.g., Frankl, 1963; Hobfoll, 2001; Jahoda, 1958; Maslow, 1968; Rogers, 1961; van den Heuvel, 2013). Human health and

1999; Kielhofner, 1983; Wilcock, 1993; Savickas, 2000, 2005).

## **Resilience**

Meaning has proved to be an important factor in dealing with changing life circumstances (Linley & Joseph, 2004; Reker, Peacock, & Wong, 1987; Tedeschi & Calhoun, 1996; van den Heuvel, 2013). For many workers, job situations are in flux. Today, more jobs are being mechanized and off-shored than ever before. Moreover, work hours are frequently reduced and job durations limited. In addition, jobs themselves are affected by technology change, environmental change, social change, and market shifts. As a result, jobs tend to be less stable and more fluid, with legacy tasks evolving or disappearing, replaced with new tasks requiring new skills. All of these factors contribute to requiring on-going work development, re-development, retooling, skill maintenance, and new skill formation. Such work development can be a daunting task that overwhelms even the best prepared.

To counteract the disorientation and frustration of accommodating change, a different way for individuals and organizations to manage stressors has been suggested. The construct of meaning is relevant in work settings where people are expected to deal with change, ambiguity, and uncertainty on an ongoing basis (van den Heuvel, 2013).

## **Developmental Pathways**

With shortened job and industry life cycles, workers must move into new situations and contexts more often across their lifespan. Shifting work focus, whether at established businesses or start-ups, requires a flexible workforce. Work contexts are

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growing in complexity both socially and functionally. No matter what the situation, doing requires interpretation of experiences from which meaning emerges.

Explicating this “new construct” (van den Heuvel, 2013, p. 62) of meaning gives another way to facilitate adult work development. Within this new construct “employees can regulate their own experience and well-being” (van den Heuvel, 2013, p. 64). If an individual’s interpretation of work is highlighted, even traditional approaches of broadly filling skill gaps could be more effective. Deeper examination of this construct ought to identify new individual developmental pathways, particularly when interpretations are compared to others that are considered more developed. This is true for professional development whether it falls into performance-level maintenance, performance improvement, or new performance arenas.

### **Within the Academy**

Even though much investigation has been done to examine and gauge performance, particularly around knowledge creation and transfer, it has been determined that while knowledge is necessary, it is not sufficient for higher quality performance (Herling, 2000). Therefore more than knowledge contributes to performance improvement. Further examination of the construct of meaning may contribute to our understanding as occupational meaning has not been well explicated as a way to facilitate development and therefore performance. Dall’Alba and Sandberg (2006) show emergent work meanings constructed by experts differ from those who are merely competent. Because an individual’s interpretation of an experience affects what is learned from that experience, on-going development ought to be affected by what interpretations have been previously constructed.

Interdisciplinary research, weaving together human development, expert and expertise studies, along with occupational science, brings together similar concepts bridging language and constructs, broadening our worldview. Studies that already exist can then be examined from a new integrated perspective (Wittemore & Knafl, 2005).

Within a naturalistic research paradigm, a meta-synthesis is considered a:

discreet and distinct approach to new inquiry . . . It creates a mechanism by which the nature of interpretation is exposed and the meanings that extend well beyond those presented in the available body of knowledge can be generated. (Paterson, Thorne, Canam & Jillings,, 2001, p. 2)

Experiential descriptions of emergent work meaning, like those revealed through phenomenography have been recognized as being both “congenial and parsimonious” (Marton, 1992, p.262) enabling identification of both developmental goals and methods reasonably precisely and effectively. Results provide positive work related developmental pathways for individuals (Marton, 1981; Sandberg 2000). Bringing together many phenomenographies would provide data for a meta-interpretation and synthesis. However, to date a meta-synthesis of existing phenomenographic findings has not been explored.

### **Problem Statement**

Performance maintenance and improvement is an imperative for individual success (Herling, 2000, Kucinich, 1997, Swanson, 1995). However, one recent study shows that performance within the adult population of the United States has fallen in basic areas (OECD, 2013). Human Resource Development (HRD) offers the model in Figure 1.1 relating development and performance. Situated between learning and



Development of expertise has been highlighted as the best way to consistently improve performance (Herling, 2000; Kucinich, 1997; Swanson, 1995).

However, expertise understood as an outcome of development, has not been well explicated (Greiner & Kehrhahn, 2008). Built on knowledge from expert and expertise study methods, HRD models are often reductionistic, abstracted, and “dehumanizing” (Bruner, 1990, p. 1). These methods described as “suitable for understanding the physical world [are] inadequate for understanding the living, feeling and thinking world [yet are still] widely used for that purpose” (Kielhofner & Forsyth, 2004, p. 333).

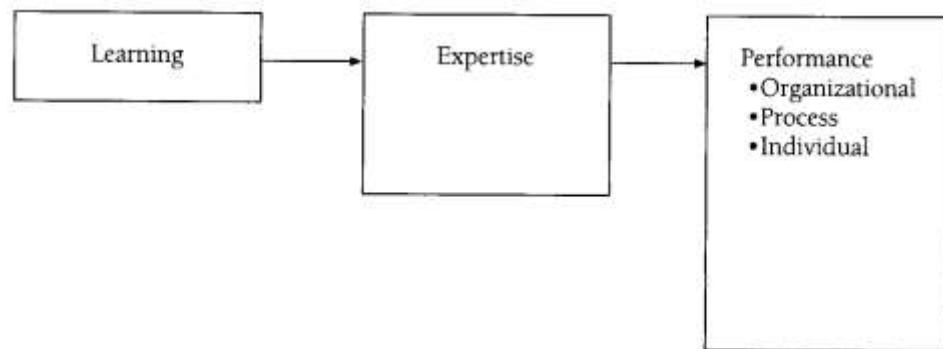


Figure 1 HRD model of vocational development (Swanson, 1995, p.209)

Dewey (as cited in Crutchin, 2004) posited that humans are “more a part of their environments, and environments more a part of people” (p.304) pointing towards a holistic system supporting of human development. Particularly within their job, “human beings thrive and develop through their occupational endeavors” (Hasselkus, 2011, p. 93). It has been posited that meaning emerges out of the first-person holistic occupational experiences, out of work performance (Kielhofner, 2008). Therefore, one avenue to improve human performance is to seek understanding of the emergent meanings that grow out of work.

### **Research Questions**

1) What are the practitioner work meanings' gathered from existing phenomenographies?

Do they relate to activity context?

Are there variations or patterns?

2) What are the synthesized work meanings?

What are the critical similarities and critical differences?

Are there variations or patterns?

### **Theoretical Rationale**

While research relating to experts and their expertise has been helpful to a point, Grenier and Kehrhahn (2008) point out that these frameworks for gauging performance have yet to provide clear processes for “developing or redeveloping workforce” (p. 201). To date this work has not substantially contributed to individual work development. Some believe this may be related to the research methodologies commonly used in expert and expertise studies (Bruner, 1990). Others opine that expertise, as a developmental construct, is not well explicated (Grenier & Kehrhahn, 2008). In any case, those striving towards holistic models of work development suggest that interpretations emerging from the experience of doing, positively contribute to formation, maintenance, and then reformation of expertise (Bereiter & Scardamalia, 1993).

An expert's constructed meaning is a critical aspect of expert performance (Bereiter & Scardamalia, 1993). Even when domain or content knowledge is made available many experienced non-experts do not perform like experts (Schraagen, 1993). The non-expert appears to interpret their work differently from experts (Schraagen, 1993). And, personal interpretation and meaning-making is important for future

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development as it affects what, if anything, is learned from an experience (Marton, 1988; 1996). Therefore, the non-expert's work meaning actually limits learning.

Individual constructed meaning emerges out of a ferment spurred by experiences in a dynamic activity context. The experience of performing actively elicits interpretation and meaning constructed in a dynamic cycle. What has been experienced, interpreted, and constructed, underpins the next dynamic cycle of performance and interpretation (Berier & Scardamalia, 1993). These constructed meanings of phenomena are posited to indicate one's level of development in relation to the phenomenon (Dall'Alba & Sandberg, 2006). In other words, one's constructed meaning of work is a reflection of one's development (Bowden, 1996)

Phenomenography makes it possible to uncover the constructed meanings of a phenomenon within a given activity context (Marton, 1988; 1992; 1996; Dall'Alba & Sandberg (2006). The assumption is that thoughtful selection of the phenomenon, the questions, and the study participants, limits or bounds the activity context being explored. 'Fixing' the activity context allows the different aspects inherent in the experienced phenomenon to be revealed. This is done via the phenomenographic methodology, where conceptions of the personally experienced phenomenon are elicited, from each participant (Sandberg, 2000). Once elicited all respondent conceptions are compared and then grouped into discrete sets. These sets form in particular ways around the salient, variable, aspects of the phenomenon (Pang, 2003). And, particular combinations of phenomenal aspects ought to form patterns (Trigwell, K., Prosser, M. and Taylor, P., 1994; Prosser, M., Trigwell, K. and Taylor, P., 1994).

Various adult development frameworks propose that activity context features are important to performance and therefore important to development. Analyzing existing phenomenographic studies for these patterns ought to reveal important features of the activity context. This meta-synthesis, of a specific phenomenon will review the holistic construct of emergent work meaning-making; relate meaning patterns of existing phenomenographs to the activity context; and both analyze and synthesis the discovered meaning-making patterns.

### **Assumptions**

Interpretative research of a constructivist nature assumes that there is no single reality of the phenomena. The multi-realities that exist around a phenomenon are not required to be uniform or cohesive, and may be directly at odds with one another (Maxwell, 2012). Findings drawn from multiple interpretative research studies are considered to be *a* way to synthesis the results, not *the* way (Maxwell, 2012). This study assumes that:

- Meaning-making is a significant construct of adult development.
- Development, in a bounded context, can be understood as performance mediated by a meaning-making pattern.
- It is possible to gather information about meaning-making through interviews, observations and from personal diaries (reference).
- Meaning-making can be identified and organized into meaningful patterns through the application of phenomenographic research methods (Marton, 1981; Sandberg 2000).
- Patterns of meaning-making, within and across work occupations, can be revealed via phenomenography.
- Systematic meta-synthesis can be applied to results across many phenomenographic studies.

- The process of phenomenography allows for emergence and identification of patterns.

### **Limitations**

This study is interpretative in nature. It will not provide measurable associations, or causal factors. It will not predict, nor does it control. It relates existing results generated in phenomenographic studies with one another, comparing and contrasting, providing new connections between constructs supporting mid-level theory building (Maxwell, 2012; Patton, 2002; Zimmer 2006).

Findings from a meta-synthesis are formed from the outcomes of earlier investigations. These earlier outcomes become the raw materials for analysis, interpretation and meta-synthesis. Therefore, meta-synthesis is based upon the original participants perceived and explained the phenomenon, how these explanations were understood and written about by the original investigators, the framework around which the original research is formed, and the interpretations and understandings of the frameworks used (Paterson, Thorne, Canam & Jillings, 2001). The synthesis ought to be understood as knowledge constructed by this investigator, with a particular point of view, theoretical predispositions, academic context, set of beliefs, and grounded in a particular historical time (Paterson, Thorne, Canam & Jillings, 2001).

### **Definition of Terms**

Interdisciplinary projects require listening to many voices. Similar or identical words are used, however the definitions occasionally vary. Philosophical assumptions implicit in definitions ought to be explicated for clarity (Boring, 1929). Towards this goal important terms are defined below.

**Activity Context**

The broadly conceived, bounded zone where human doing and its outcome occur. Activity context incorporates: ongoing social roles and groups: work, home, community; emergent relationships: political, economic: and grounded physical environment: people, other beings and objects

**Construct**

Construct, or hypothetical construct, is one way to label and discuss an unobservable phenomenon (Cronback & Meehl, 1955). For example, in this study a key construct is meaning-making.

**Development**

In alignment with the biological sciences, here development is a systemic change emerging from an interactive, dynamic system of environment and hereditary that happens over time (Bee & Bjorkland, 2004). Changes may occur in pre-established sequences that are biological in nature or from influences outside of the individual. Change can be considered as positive, neutral, or negative.

**Expert, Expertise**

Expert, as a noun, is a person recognized as having technique, ability, understanding, discernment or skills grounded in individual nature, related biological factors, and experience. An expert may judge, share their expertise, or give advice within some identified activity context.

Expert, as a title, may be given or earned, formally via organizations, peers, or groups; or informally via public, or even self-proclamation (Guest, Regehr & Tiberius, 2001; Reid et al., 2011; Van der Heijden, 2002).

Expertise, an attribute or descriptor, is a modifier of how much expert-ness one has constructed within a given dynamic activity context. One's expertise is commonly displayed through some form of performance (Farrington-Darby & Wilson, 2006). This performance may, or may not be visible to others.

### **Heterarchy**

The emergent relationships of a family of phenomena where no over-riding processes predetermine relationships or outcomes. Contrast with predetermined, hierarchical relationships (Cutchin, 2004).

### **Hierarchy**

The totality of interwoven and inter-related dimensions of a family of phenomena, often not visible or accessible, forms a coherent and recognizable whole (Cochran, 1990; Young, Valach & Collins, 2002).

### **Interpretation**

The process of explaining to oneself something that already exists in the present (Young, Valach & Collins, 2002). Abilities, opportunities, and expectations are anchored in, and arise out of interpretation (Kielhofner, 2008). Interpretation is linked to development via the potential of the situated embodied context within which the experiences occur.

### **Meaning**

An individual's personally constructed and held outcome of interpretation of first person experiences. Literature may also use sense-making or simply meaning depending on the area of study. Personally constructed meaning may be formed and re-formed, made and re-made. This process of forming meaning is here termed meaning-making.

While personal constructed meaning forms through some meaning-making processes, these processes these are beyond the scope of this study.

### **Performance**

Doing, or acting on the world towards a desired outcome, eliciting a particular emergent first-person experience (Kielhofner, 2008). Performance is conceived of as a naturalistic, holistic gauge that indicates level of expertise in a given milieu, or dynamic activity context. An individual's performance ought to be closely related to that individual's development within the performance activity context. Activity can be visible to others or not, however, the performance outcome is considered as visible, even if the work done is 'exclusively' mental.

### **System**

The relationships of a particular family of inter-related phenomena, bounded within an activity context, grounded in feedback loops and complex processes and their *hierarchical* relationships played out over time (Vallacher & Nowak, 1994). Including but not limited to the qualitatively different states and interactive emergent state changes of these relationships (Vallacher & Nowak, 1994).

### **Work**

Doing, over time, productive activities such as services or creating. Work could be income producing or not (e.g. employee, student, volunteer, serious hobbyist). Work also includes related and supporting learning activities, such as training or practice.

### **Summary**

To help adults perform as desired for work success, we ought to seek understanding of the emergent first person meanings that grow out of experiencing work



and how these meanings relate to work performance. This understanding should point

towards unexplored work development pathways. Chapter II will review an adult

development framework that underpins HRD, expertise studies. And will also review an

adult development framework that purports to seek holistic perspectives, grounded in

occupational studies.

**CHAPTER II****REVIEW OF THE LITERATURE****Introduction****Problem**

While work development has been examined from various perspectives, a call has been made to synthesize adult development threads, with the purpose of moving towards a holistic understanding of adult work development (Grenier & Kehrhahn, 2008; Herling & Provo, 2000; Kuchinke, 1997; Ollis, Macpherson, & Collins, 2006). To more deeply explore a holistic construct of adult work development, this review's focus is on two broad adult work performance frameworks. These frameworks are grounded in either Expert and Expertise Studies (EES) or Occupational Studies (OS), each with a unique perspective and purpose.

Most often, EES is linked to psychology, particularly cognitive psychology. Psychology, in general, is the study of the human individual. Sub-areas that contribute to the extensive EES literature include cognitive studies, decision making science, artificial intelligence, and information science (Gass & Assad, 2005). EES essentially uses humans as models, and as inspiration, for the purpose of designing thinking systems and machines (Bransford, Brown and Cocking, 1999).

Much work has been done in the field of EES to quantify clear differences in behaviors between people doing near identical set of actions, extending knowledge around how human cognitive processes function. However, the commonly referenced EES models of human performance have not translated into useful work development models (Greiner & Kehrhahn, 2008). A call has been made to seek out developmentally

appropriate theory, rather than continuing to ground adult work development studies on traditional EES models (Alexander 1992). One way to do this is by accessing first person work experiences, interpretations, and emergent meanings.

Occupational Studies (OS) folds in occupational therapy and occupational science, and acknowledges people as “sociocultural creatures who share common worlds of action and meaning” (Kielhofner, 2008, p. 5). Meyer (1977; 1922), a founder of modern occupational therapy, grounded his ‘Philosophy of Occupational Theory’ on the notion that a human is not merely a “machine, with an abstract mind or soul added to it” (1977/1922, p.303). By linking Deweyan developmental philosophy, with an individual’s health and well-being (Cutchin, 2004), Meyer (1977; 1922) aspires “to a holistic worldview that is centered on activity” (p. 303).

OS views work occupation as organic, holistic, and constructed via development processes (Kielhofner, 2008; Slagle & Robeson, 1933). “To date, occupational science research has focused primarily on people’s experience of engaging in occupation, its meanings and outcomes” (Riley, J. 2011, p.322); from a perspective specifically promoting human health and well-being. It has been proposed that a “new” holistic construct of emergent meaning may offer a way to discover development pathways for adults at work (van den Heuvel, 2013). However, to date, meaning and meaning-making, has not been well explicated as a construct of development.

It has been posited that out of work performance emerges meaning, a first-person holistic experience (Kielhofner, 2008). “Paying careful attention to subjective experience in its own right can reveal a great deal about performance capacity and limitation of performance” (Kielhofner, 2008, p. 69;). Because first-person work experience sheds

light on possible developmental pathways, it is critical to reflect on these emergent experiences (Riley, 2011). Therefore, to aid adults seeking work success via performance improvement, we ought to seek better understanding of the emergent first person meanings that grow out of experiencing work (Nelson, 1988); and how these meanings relate to work performance. This increased understanding ought to point towards unexplored work development pathways.

### **Expert and Expertise Studies**

#### **Background**

Appearing in the 1950s essentially borne from modern cognitive psychology, expert systems studies are, “a body of stored knowledge and an inference engine to offer advice on difficult problems” (Gass & Assad, 2005 p. 144). “Some mark the rebirth of cognitive studies with the Hixon Symposium on Cerebral Mechanisms in Behavior, which took place in September, 1948 at the California Institute of Technology” (Benjamin Jr., 2007, p. 207). “One of the chief factors contributing to the rebirth of cognitive psychology was the computer, and it did not take psychologists long to recognize its worth for their field” (Benjamin Jr., 2007, p.208).

As a mathematics undergraduate, “Alan M. Turing in 1935 . . . formalized the notion of computability and introduced the Turing machine as a model for a universal computing machine” (Gass & Assad, 2005, p. 47). According to Pribram (1990) “Turing (1937) pointed out, self-reflective programs endowed with recurrsiveness can locate any item stored in them and can associate any group of items” (p. 86). “John von Neumann (1903-1957) was one of the speakers at the Hixon Symposium in 1948 promoting a computer metaphor for the operation of the brain” (Benjamin, Jr. p. 208), and was also

2005). Cybernetics separated information from the system that transmitted the information, decoupling the rules, the logic or inference, by which the system operates, from the information (Gass & Assad, 2005). "By the late 1950's . . . the conceptualization of humans as information processors was commonplace" (Benjamin, Jr. p. 208).

The design and development of artificial intelligence (AI) by pioneers Allen Newell and Herbert Simon "played a key role in the conceptual models of cognitive psychology"(Benjamin Jr., 2007, p.18). One powerful model captures how humans actually function, particularly those considered exceptional in a domain. Mylopoulos and Regehr (2007) remember, "because the knowledge is implicit in the work that is being performed, watching experts perform at particular time-points in our studies was thought to reveal the knowledge they possessed" (p. 1163). The information gathered from studying experts was then used to develop machine processes. This effort to reverse-engineer human thinking, inextricably coupled and then defined human thinking as machine-like processing. With AI and expert studies as a springboard, related avenues of study of expert performance opened up (e.g. decision making, problem solving, and knowledge management systems).

## **Methodology**

Below is a streamlined outline of the salient points of the basic methodology used to uncover thinking processes of humans performing exceptionally, found in Expert and Expertise Studies (EES). Not intended to cover all possible or existing permutations of EES research designs, this give a flavor, highlighting general features, assumptions, and

limitations of outcomes. The general intent of EES is to discover relationships between pre-determined performance classifications and details of actual performances that might mediate or effect performance outcomes. A minimalistic EES research design includes these four points:

- Focus of the performance, usually called the domain, discipline, or subject
- Situation of performance, or the dynamic system often called context or activity context
- Subjects whose experimentally observed performance is elicited, and then usually classified by expected performance quality
- Researchers, eliciting and documenting performances

### **Domain**

To explicate differences between performances, studies focus on a specific domain (Chi, 2006; Farrington-Darby & Wilson, 2006; Grenier & Kehrhahn, 2008). Experimental research methodology anchors, or fixes, the domain as a dependent variable. As both the subject's expected-performance-classification and actual elicited performance are in the same domain, variations in the elicited performances are considered as being mediated by something else.

### **Dynamic System of Activity Context**

All subject-elicited-performances are considered as emerging from an identical bounded environment, system, dynamic activity context (Shanteau, 1992a, 1992b). To help assure the environment is identical for all subjects, the activity context is often a laboratory, or some other environment that can be tightly controlled, or bounded (Alexander, 2004). This allows the researcher to assume the dynamic activity context is perceived as similar for all participants. By so assuming, the activity context is

allows the researcher to uncouple the activity context from the performances.

### **Classification of Expected Performance within a Domain**

Classification of expected domain performance of participants is done at the outset of the project by pre-determined accepted methods (for a detailed discussion see Shanteau, Weiss, Thomas & Pounds, 2002). Classification ranks a subject's expected performance ability from none to a great deal and becomes an experimental 'given' (Chi, 2006; Shanteau, 1992a, 1992b). Classification is domain dependent, in that it relies on norms of performance within the given domain.

EES pioneers used the terms of expert and novice dichotomously (Alexander, 2004). Over time, dependent on the specific area of research, differences between performances were uncovered calling for further research refinements (Shanteau, 1992b). Novice was parsed into more categories. (i.e., naïve, beginner, experienced, non-expert). However, 'expert', as legacy terminology, most often denotes those with a great deal of domain experience and highest level of expected domain performance.

### **Elicited Performances**

Performance comparisons, made possible by fixing both performance domain and activity context as described above, uncovers differences between subjects (i.e., beginner, experienced non-expert, and expert). This deceptively simple method of comparison provides a wealth of knowledge regarding what is similar and different between individual performances in relationship to expertise classification (see both Chi (2006) and Shadbolt, (2005) for an extensive discussion).

### **Significance of Domain**

In typical EES research design the domain is assumed as being the same, or constant, for all participants. However, domains do not appear to necessarily be experienced similarly by each respondent (Lundberg, 1989). Because of the wide range of findings around domain, it has been suggested that domain may not be robust enough for theory building of adult work development (Grenier & Kehrhahn, 2008; Hjørland & Albrechtsen, 1995). Domains can be considered as systems with various dimensions, or aspects. To this end recent frameworks proposing various domain dimensions may help explain variations of performance (Alexander, 1992; Alexander, 2004; Grenier & Kehrhahn, 2008; Shanteau, Weiss, Thomas, & Pounds, 2002). In addition, Lundberg (1989) and Alexander (2004) state that expertness is intrinsically linked, or anchored, in a specific domain of practice, with each domain expert having “different knowledge structures” from one another (Lundberg (1989, p. 275). These individual first person knowledge structures emerge from an individual's development (Lajoie, 2003), where each expert has her own lived experiences and history encompassing and then transcending many domains, and domain dimensions. Therefore, the constructed first-person meaning of domain aspects effect not only performance, but also mediate development pathways (for a detailed discussion see Shanteau, Weiss, Thomas & Pounds, 2002).

### **Importance of Activity Context**

Work performance is not random activity, but purposeful goal directed behavior (Tolman, 1932). Performance allows individuals to recall aspects of the situation, the activity context, in which the expertise was developed. Through experience, the work activity context and work performance are inextricably linked. In-depth, rich,



contextualized knowledge gained from experience has been posited as necessary for

“excellence in most fields” (Gleespen, 1996, p.502; Herling 2000). This excellence, or expertise, emerges through performance (Shanteau, 1992a); performance that is grounded in the individual’s work development activity contexts (Sternberg, 1999). Or in other words, the level of expertness of a performance in an activity context gauges development within the activity context (Shanteau, 1992a; Sternberg 1999).

### **Summary**

Over the last half century, much work has been done in EES to quantify clear differences in performances between people charged with the same work. It has been uncovered that experts draw on their first-person domain experiences, seeking a “qualitative” (Chi & Feltovich, 1981, p. 149) fit between a new problem and already known problem structures. However, application of EES models has been questioned for use in knowledge building around adult work development, as they are interested in process descriptions (Alexander, 2004).

EES’s “inadequate mechanistic concepts have been used to understand” (Kielhofner & Forsyth, 2004, p. 333) organic human development. However, EES concepts and constructs, “suitable for understanding the physical world [are] inadequate for understanding the living, feeling and thinking world” (Kielhofner & Forsyth, 2004, p. 333). In addition, an EES “orientation fails to illuminate the process by which one progresses from true novice to documented expert” (Alexander, 2004, p. 279). The methods and findings of this area of research were not intended, nor oriented towards, discovering and understanding developmental processes. Even though EES models are often leveraged to underpin adult work development models.

## **Background**

The goal of Occupational Studies (OS) is to pursue wellness by healing “body, mind, and social position” (Meyer, p. 22). Central to wellness is the “importance of purposefully activity” (Kielhofner, 1983, p. 4). As “the key to personhood” (Bateson, 1996, p. 11), is doing, humans are naturally considered “occupational [purposefully] acting on and in the world” (Kielhofner, 1983, p. 12; Tolman, 1932).

Schultze & Miller (2004) note that humans seek “meaning in their daily efforts” (p. 143), particularly, “on the job” (van den Heuvel, 2013, p. 62). Researchers have acknowledged the importance of being able to experience meaning for optimal human development (e.g., Frankl, 1963; Hobfoll, 2001; Jahoda, 1958; Maslow, 1968; Rogers, 1961; van den Heuvel, 2013). Without occupation for meaning to emerge, well-being suffers (Christiansen, 1999; Kielhofner, 1983; Savickas, 2000, 2005, 2009; Wilcock, 1993).

## **History**

Occupational therapy, a contributor to OS, is an outgrowth of a healing treatment approach for mental illness. This approach was formed professionally in 1917, with formal professional education programs, and academic publications following shortly thereafter (Reilly, 1971). Meyer (1977/1922), a founder of the modern era of occupational therapy, grounded his ‘Philosophy of Occupational Theory’ in the notion that humans are more than “machine, with an abstract mind or soul added to it” (p.10). Cutchin (2004) notes that Meyer, in linking Deweyan philosophy with occupational therapy, gives “a holistic worldview that is centered on activity” (p. 303).

Post World War II, OS became associated with allopathic medicine, a positivistic medical environment. A renewed commitment to wellness in the 1970's set the groundwork for re-establishing a wholistic, systemic, community-based treatment model (Hasselkus, 2011; Kielhofner, 1983, 1988; Reilly, 1971). This re-evaluation of the position of OS in health care, countered the "narrower scientific and medical based concept of practice" (Burke, 1983, p. 126) that had become "dehumanizing" (Bruner, 1990, p. 1). However, reductionistic methods are still "widely used" (Kielhofner & Forsyth, 2004, p. 333) to understand human work development.

OS is concerned with the wellness of individuals, as "sociocultural creatures who share common worlds of action and meaning" (Kielhofner, 2008, p. 5); "Occupation involves doing things among and with others" (Kielhofner, 2008, p. 5) expressing and maintaining our common "social fabric [while making a place in the] world by what they do" (Kielhofner, 2008, p. 5). "Occupation encompasses a wide range of doing that occurs in the context of time, space, society, and culture. Temporal, physical, social, and cultural contexts pose conditions that invite, shape, and inform human occupation" (Kielhofner, 2008, p 5). The milieu of development, the dynamic activity context across time, is the space within which humans experience and are formed.

## **Occupation**

"To speak of occupation is to describe goal-directed activity in the context of living" (Christiansen, 1999. p. 553). "Occupation is purposeful, meaningful and goal-directed doing that is socio-culturally, historically and temporally situated" (Clark, Wood, & Larson, 1998; Gray, 1997; Polatajko, 2004; Wilcock, 1998). Riley (2011) understands occupation as a platform, "a context for meaning and doing" (p. 322). While

Hasselkus (2011) positions the doing of work as fundamentally developmental, where

“human beings thrive and develop through their occupational endeavors” (p. 93).

### **Work**

Within OS, work is considered a subset of occupation, “referring to activities (both paid and unpaid) that provide services or commodities to others such as ideas, knowledge, help, information-sharing, entertaining, utilitarian or artistic objects, and protection” (Kielhofner, 2008, p.5). Work occupation also includes any specific developmental activities (e.g. study, practice, apprenticeship).

### **Model of Work Meaning-Making**

When an individual works, they experience in real time the performance and the outcome of the performance (Nelson, 1988). From these work experiences humans “are motivated to make meaning of what happens in their environments” (van den Heuvel; 2013, p. 62). This meaning making is “an active process on the part of the individual” (Nelson, 1988, p. 635). “When we interpret events, we evaluate them for personal meaning. If they are meaningful, they have significance to us, we respond emotionally to them, and they shape our behavior and perceptions of life” (Christiansen, 1999, p. 550).

Work can be thought of “in the abstract” (Nelson, 1988, p. 633) or as specific activities. Nelson (1988) proposes that work ought to be conceptualized as “the relationship” (p. 633) of a work form and the work performance. The work form is an abstract, culturally held notion, while work performance is the individual’s active doing. The pre-existing culturally delimited work form elicits, guides, and structures work performing (Nelson, 1988). Work meaning emerges from an individual’s ongoing

occupational performance" (Nelson, 1988, p. 633).

A work form guides work performance while the individual gives meaning and purpose respectively. Work performance, usually observable, is the

... means to go through or carry out something, and occupational performance means to go through or carry out the occupational form.

Performing is the doing, the action, the active behavior, or the active responses exhibited within the context of an occupational form. (Nelson, 1988 p. 634)

The objective, culturally held work form can be studied separately from the individual (Nelson & Jepson-Thomas, 2003). These "habitual practices, patterns and processes . . . embedded in tradition" (Riley, 2011, p. 324) are readily explained and transferred to others. Traditional rules, practices, processes, and procedures, while a starting point for performing, once understood and assimilated become part of a craftsperson's tacit knowledge or personal knowing (Dormer, 1997b; Polanyi, 1958; Riley, 2011).

Humans initiate performing by manifesting the culturally-held (objective) form (Nelson, 1988). Out of this experience a first person, internalized version of the form is constructed (Nelson, 1988). Similar to Mead's (1934) notion of an 'adjustive relationship' between the social and private self, the performer actively constructs a private-form, based on the pre-existing objective cultural form and their experiences within the dynamic activity context. The individual actively responds to the pre-existing culturally-held form by experiencing and interpreting, from which meaning emerges

(Nelson, 1988). Experiencing is embedded within a situation, an activity context, where the “larger sociocultural reality that structures possible relationships” underpin meaning making (Cutchin, 2004, p.305; Alexander, 1987). Over time, the linking of activity contexts with meaning making creates “transitions to and possibilities of later experiences” (Dewey, 1929/1980, p. 236). “Potentially the individual’s entire developmental history can be brought to bear on that interpretation. The same occupation may be interpreted differently by different individuals depending on all the factors that have contributed to each individual’s current state of development” (Nelson, 1988, p. 635; Cynkin, 1979). These contributing factors are found in the dynamic system of the activity context. In a dynamic work activity system, even small changes in the system’s aspects affect an individual’s constructed emergent meanings (Nelson, 1988).

## **Experience**

Experiences borne out of performing, interpreting, and adjusting relationships of a work form, support rich work meaning-making. “The greater the breadth and depth of experience” (Hasselkus, 2011, p. 4) the more likely the individual will have constructed enriched personal meanings of their work forms. Those with less lived-experience are more reliant on collective, socially defined, pre-made forms, and their culturally determined meanings.

A person who is inexperienced . . . relies heavily on social definitions of meaning in the situation (theoretical knowledge, norms, principles, socially expected roles); the person who is experienced relies more on his or her personal history to create meaning in the situation, to understand the whole, to become involved. (Hasselkus, 2011, p. 6)

Experience both fuels and provides material for construction of the first-person work form. Experiencing “is an active mode of existence in which evolving interactions and transactions—active relationships that are continuous—provide the ever-present background for meaning in the world” (Cutchin, 2004, p. 304). More than an outcome experience is an inclusive, “comprehensive activity” (Dewey, 1929/1989, p. 19); grounded in “multifarious forms of interrelationships” (Boisvert, 1998, p. 21).

[Experience] cuts through dualisms of object and subject, positing a constant connection, indeed relational process, between person and environment . . . interconnectedness of person and her or his context where each penetrates into and becomes a part of the other [deepens the meanings emergent through experience]. (Cutchin, 2004, p. 304)

### **Meaning of Work**

Meaning of work emerges from an individual's first-person interpretation of the work form (Nelson, 1988; Riley, 2011). “Emergence is the principle that complex actions, thoughts, and feelings spontaneously arise out of the interactions of several components” (Kielhofner, 2008, p. 25). “It is the continual transaction of the person—place whole, in times of stability, but particularly in times of change, that provide meaning through actions to re-integrate the whole” (Cutchin, 2004, p.309). With perception of differences, or variations of the meaning of phenomenal aspects, possibilities are revealed through these on-going transactions.

“What one does, thinks, and feels emerges out of the collective conditions” (Kielhofner, 2008, p. 25) present in the dynamic system. The same occupation may be interpreted differently by different individuals depending on which aspects have

contributed to each individual's current state of development" (Nelson, 1988, p. 635). As

different meanings emerge depending on "level of interest, importance, value, and so forth that the subject held for the activity [the] degree of meaningfulness [along with] types of meanings assigned" (Ferguson & Trombly, 1997, p. 513) also is expected to vary.

### **Phenomenography**

Phenomenography, a "research specialization" (Marton & Booth, 1997, p.110), first used in formal education settings, quickly moved into research efforts towards understanding work occupation development. Phenomenography focuses on the ways a phenomenon is experienced (Marton & Booth, 1997), rather than on human behavior or mental states (Marton and Booth, 1997). The aim of reconstructing work occupation experiences is to understand the phenomenon from many practitioners' perspectives. In these developmentally-oriented work-focused studies, practice is enmeshed within a social context reflecting many of the aspects of the context. The practical implication is that professional practice incorporates an understanding of the social and historical dynamic activity contexts within which the profession is practiced. This practitioner grounded holistic view of work meaning is what is sought.

Recent phenomenographic work has explored specialized modes of understanding that are embedded in various professional practices and what these mean for human development (Sandberg, 2000; Wright, Murray & Geale; 2007). Collin (2002, 2004, 2006) and Sandberg (2000) both analyzed the experiences of professional practice, including characteristics of workplace development and understanding in situ. Their projects both interviewed and observed participants. In contrast, Dall'Alba (2005) used a



formal learning environment to promote, simulate or induce desired characteristics of

professional practice. This was achieved by using individual and group reflection, action learning projects and communities of practice. The characteristics of practice are the links from experience to a professional's understanding of their practice. Wright, Murray & Geale (2007) induced the recollection of work experiences by interviewing faculty about a specific aspect of their professional practice, the advising of PhD students. In these studies, in situ or not, practice is enmeshed within a social context reflecting many of the aspects of the context. The practical implication is that professional practice has embedded within it an understanding of the social and historical contexts within which the profession is practiced.

### **Summary**

The research methodology, phenomenography, is designed to uncover the first person constructed meanings of the phenomenon of study. Knowing these different ways highlights significant dimensions of the phenomenon; dimensions that ought to represent the embedded domain and related work activity context. In addition, it is also possible to capture the reflection of how these dimensions qualitatively vary. Therefore, if the focus of study is a particular work occupation, the phenomenographic findings ought to display the significant holistic dimensions of the work for that group of respondents. To this end it is proposed that by bringing together many phenomenographies of a single work occupation, pooling the findings, and then synthesizing same, significant dimensions of work ought to be revealed.

**CHAPTER III****METHODOLOGY****Background**

The goal of this study was to uncover patterns of work meaning. To do this phenomenographys were purposefully selected and then mined for their findings. These finding then became the primary data for interpretation (Sandelowski & Barroso, 2007). By pooling the data sets from many work occupation-focused phenomenographys, it was possible to create a synthesis of that work. As phenomenography was explicitly developed to reveal conceptions that form during development, learning, and performance (Creswell, 1998; Dall'Alba, 2005, Dall'Alba, & Sandberg, 2006; Marten, 1992; Sandberg, 2000; Sandberg & Targama, 2007); it is well suited to provide primary data for this project.

**Meta Synthesis**

Meta-synthesis, also termed meta-study, or qualitative meta-analysis (Sandelowski & Barroso, 2007), is a relatively new method of inquiry offering "a means of enhancing the contribution of qualitative findings" (Zimmer, 2004, p. 311). Linking empirical findings from existing phenomenographys to one another first requires gathering together potential studies (Maxwell, 2012; Patton, 2002; Sandelowski & Barroso, 1997; Zimmer 2004) from which to discover patterns and related concepts, of individual work meaning (Lincoln, 2005; Paterson, Thorne, Canam & Jillings, 2001; Ruana, 2005; Zimmer, 2004).

It is understood that naturalistic research involves iterate emergent processes (Creswell, 1998; Maxwell, 2012; Paterson 2001; Sandelowski & Barroso, 2007). As

such, it is likely that additional criteria, sources of results, and key words may evolve and emerge. It was expected that this emergent process might reveal unanticipated yet interesting and informative perspectives and outcomes. While the study process steps are given, what actually occurred evolved (Paterson, Thorne, Canam & Jillings, 2001; Sandelowski & Barroso, 2007). As this evolution could not be specifically anticipated, any process adjustments were documented in Chapter 4. The investigator, as an integral part of this research project, maintained a journal documenting methods and steps documenting the actual process. The investigator's journal is discussed later in this chapter under 'quality of evidence.'

### **Research Questions**

- 1) What are the practitioner work meanings' gathered from existing phenomenographys?

Do they relate to activity context?

Are there variations or patterns?

- 2) What are the synthesized work meanings?

What are the critical similarities and critical differences?

Are there variations or patterns?

### **Research Design**

Paterson et al. (2001) outlines meta-study as having three discreet steps.

1. Setting the stage: purpose, questions, and framework
2. Seeking and screening: searching for and assessing fit of existing results
3. Interpretation:
  - a. Systems for groupings, key terms, phenomena details, research details

- b. "Meta-method" (p. 71) compares and contrasts patterns and themes
- c. "Meta-theory" (p. 91) compares and contrasts underpinning theories
- d. "Meta-synthesis" (p. 109) deconstruction, synthesis, and transformation

These steps were followed with the modification of step 3 below:

1. Setting: purpose, questions, and framework
2. Searching and screening: finding studies, assessing inclusion fit, and methodological affirmation.
3. Interpretation:
  - a. Methods generating patterns (groupings, terms, phenomena, and research details)
  - b. Compares and contrasts patterns and themes
  - c. Deconstruction, synthesis, and transformation of findings

### **Step One: Setting the Stage**

As the first two chapters set the stage, no further discussion is needed here; instead the focus forward is on steps two and three.

### **Step Two: Searching and Screening**

The focus of step two was to find potential studies for inclusion. To this end the search was broadly conceived. The basic criteria, from Chapter II for inclusion in the study was:

- Participants should be adults
- Activity context should be work
- Study ought to be published in a peer reviewed journal

- Study ought to be phenomenographically grounded

As mentioned above, for this meta-interpretation the underpinning theories for all contribution studies were affirmed as phenomenographs. This affirmation occurred when the pool of potential phenomenographic studies was gathered. However, prior to this final affirmation, preliminary inclusion around methodology was based upon either: an explicit statement that the methodology phenomenographic; or alignment with the phenomenographic methodology. In the second circumstance a final affirmation process would either eliminate or confirm methodological grounding (Sandelowski & Barroso, 2007).

Because phenomenographic studies cross academic discipline boundaries, and work domains, a wide variety of publication search engines were first scanned and searched. Search terms and key words included: phenomenography, meaning, meaning-making, and ways of understanding; vocation, profession, work, workplace, adult, and development. As the search progressed additional search terms emerged.

As it was expected that the majority of studies would come from this initial publication database effort, a significant period of time was set aside once started; continuing until reaching saturation (Patton, 2002). The investigator documented searches with all related and relevant information such as terms and dates of searches. Publication demonstrated the quality of the knowledge used for the meta-synthesis, and therefore supported the quality of the outcomes of the study. Specifics detailed below, under the heading of “quality of evidence” later in this chapter. However, adjustments were documented in the investigator’s journal. While listed as discrete, the first and second inclusion criteria were linked as studies of work development generally involve adults;

While an earlier pilot-search indicated enough studies existed that ought to fit the criteria, the actual number of studies able to contribute primary data was unknown. Phenomenographic guidelines recommend about fifteen contributing data sets (Sandberg, 1996). The pool of findings ought to be large enough to contain enough findings for the meta-synthesis to be meaningful; and also display as much variation within the contributors as possible.

Only through a thorough search process would it be possible to confirm the number of phenomenographic studies relating to understanding of work occupations. This search process was grounded in the inclusion criteria stated in Chapter II. Initially four criteria for inclusion were considered (see discussion there), however it was recognized that respondents, in investigations of work, would likely be adults. This was confirmed, reducing the functional inclusion criteria from four to three:

- Methodology is phenomenographically grounded
- Phenomenon of interest is a work occupation
- Study was published in a peer reviewed journal, or in pre-publication

Once the potential study pool was gathered, the occupation of focus emerged. This emergence is based upon the number, quality, and variation displayed within the pooled studies of a given work occupation. If an abundance of quality phenomenographys closely related to the research questions and phenomena are discovered during the seeking and screening phase, the investigator ought to include the widest range of respondents to promote diversity of outcomes (Marten, 1992, 1996). This purposeful sample fosters “in-depth understanding” (Patton, 2002. p. 46) of the meaning

Running head: A meta-study of practitioner's conceptions  
of a work occupation, by providing the widest set of experiences of the phenomenon as possible.

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Finally, the remaining potential studies methodological fit was affirmed. "Research of research . . . should meet the same standards as primary research in methodological rigor" (Wittemore & Knafl, 2005, p.548). While it is possible to synthesize evidence from various methodologies, additional up-front steps to identify, qualify, and transform outcomes are then required (Zimmer, 2006). Every step risks denaturing findings beyond the intent of the original research methodology, with the undesired result of reducing truthfulness and authenticity (Lincoln & Guba, 1985). Therefore, findings only from phenomenographic grounded studies will be used, encouraging rigor, as the underlying ontological and epistemological perspective of all studies used were similar (Creswell, 1995).

Unlike searching and seeking where the orientation was broad inclusion, now the aim shifted to tighten the requirements with the explicit purpose of excluding, or screening out, studies that did not fit. While ideally an experienced phenomenographic researcher would confirm methodological fit, this advantage was not available. An experienced reviewer might improve the quality of the determination of the methodology. However, Sandelowski and Barroso (2007) emphasize that while important, the stated method of a study is not as critical as the actual findings "reveal the kind of analytic and interpretive work actually performed" (p. 141). Bridging this knowledge gap, touch points of phenomenographic methodology quality were formed to document the affirmation process.

### Methodology affirmation process

Each study was closely examined to confirm its fit to phenomenographic methodology. This affirmed the similarity of the underlying ontological and epistemological perspective of all studies contributing primary data (Creswell, 1998). Methodological affirmation was the comparison of the remaining pooled studies to these fourteen touch points. Once, the contributing studies were affirmed, the data sets could be extracted and formatted, and then interpreted and synthesized. Table 1 illustrates 'Fourteen touch points of phenomenographic methodology quality', formed by integrating two perspectives of phenomenographic methodological quality, serving as a methodological affirmation tool for each study.

Table 1

#### *Fourteen Touch Points of Phenomenographic Methodology Quality*

##### **Prepare**

1. Research objectives:
2. Respondent group description:
3. Respondent selection process:  
*Standard Variety*
4. Number:  
*Standard between 10 and 30*
5. Means of collection of findings:  
*Standard face-to-face interview*
6. Sample of Questions:  
*Standard are what and how of the phenomenon*
7. Investigator interviewing skills comments:

##### **Collect**

8. Investigator's transcription accurately reflects respondent experiences:
9. Time for in-depth familiarization with the findings:

##### **Analyze**

10. Aware of investigator's presuppositions:  
*Standard bracketing*
11. Initial identification of emergent patterns:  
*Standard iterative compare/contrast*
12. Articulation of the essence of similarity within each category:  
*Standard respondent quotes*
13. Naming of categories of description:  
*Standard useful*
14. Outcome space  
*Standard a useful, structured, comprehensive expression of the researched phenomenon*



Ashworth & Lucas (2000, p 300) offers nine steps to producing a phenomenography with

Dahlgren and Fallsberg (1991) adding eight considerations of a quality

phenomenography. The inclusion of prose that reflects these 14 touch points

demonstrates a standard investigative quality of the phenomenographic process. The data

collected around affirmation relating to these 14 touch points is shown in Appendix 1

(p.110) Table A1 'Quality of Primary Studies'.

Dahlgren and Fallsberg (1991) outlines eight steps in the phenomenographic process; a process with the goal to faithfully describe the qualitatively different ways of perceiving the phenomenon investigated, discovering categories of descriptions, and forming an outcome space. However, in tandem with these steps, Ashworth & Lucas (2000, p 300) identifies nine investigative practices to improve the quality of phenomenography findings. These practices take into account the need to bracket presuppositions and to develop an empathic understanding of the respondent's world.

Prior to beginning:

- Investigator should identify the broad objectives of the research study, the phenomenon under investigation, recognizing that each respondent's meaning may be quite different.
- Respondent selection should avoid presuppositions about the nature of the phenomenon or the nature of conceptions held by particular 'types' of individual while observing common-sense precautions about maintaining 'variety' of experience. Selection looks towards creating a rich phenomenographic outcome space, where different voices are heard and from which the investigator could discern and described a nuanced picture of relevant experiences within a cohort.
- Investigator ought to determine the most appropriate means of obtaining experiences, while allowing freedom for the respondent.

- Investigator ought to allow for respondents to have maximum opportunity to react, and questions posed ought not be based on investigators presumptions but should emerge out of the interest to make clear the respondent's experience.
- Investigator interviewing skills should be subject to review and changes, minimizing closed description.

Finding analysis:

- Investigator's transcription of the interview should accurately reflect emphases of the participant.
- The analysis should continue to be aware of the importation of presuppositions, and be carried out with the maximum exercise of empathic understanding.
- Analysis should avoid premature closure for the sake of producing logically and hierarchically-related categories of description.
- The process of analysis should be sufficiently clearly described to allow the reader to evaluate the attempt to achieve bracketing and empathy and trace the process by which findings have emerged.

Usually between 10 and 30 interviews, each of 30–60 minutes, are conducted, recorded and transcribed in full. Trigwell (2000) acknowledges that the small number is as much a pragmatic consideration because of the sheer quantity of text data. However, Marton (1986) clearly indicates it is not the quantity of the interviews that is critical, but the diversity of respondents. Data collected is most often from face to face interviews with a goal of facilitate respondent's focus on specific parts of the interview expressing conceptions of objects or phenomena; exploring their limitations and experienced meaning of these objects. Audio recordings, transcribed verbatim are the most common form of data. While not often done, use of artifacts, documents and observation may

underpin thicker descriptions adding richness beyond interviewing. However, there is no expectation that data will be gathered by more than open-ended and respondent friendly face-to-face interviews.

Adding more investigative process oriented details, Dahlgren and Fallsberg (1991, p.152) outlined eight steps of a quality phenomenography.

#### Familiarization

- With the data, the text of the interviews, via prolonged and repeated exposure to, and immersion in, the transcripts.
- We must adopt a perspective in which the responses appear not only comprehensible, but also logical. The investigator is trying to look with the respondent and see the world as they see it.
- Identification and initial grouping:  
The categories are not general characterizations of the conceptions but forms of expressing the conceptions.

#### Compare and contrast conceptions to determine differences or agreement

- Grouping into categories of description;  
Looking for emergent patterns from the findings. It does not try and fit the data to pre-determined patterns.
- Articulation of the essence of similarity within each category;  
Use of quotations is essential, allowing the voice of respondents to survive
- Labeling of groups or categories is appropriate labeled as one goal of phenomenography to discover the structural framework within which various categories of understanding exist. Such structures (a complex of categories of description) should prove useful in understanding other people's understanding.

#### Outcome space

- Developing a coherent visual mapping, of the minimum number of categories that include all the variations in the data, and also to demonstrate an internal consistency. The outcome space is a comprehensive expression of the researched phenomenon

- Pragmatic validity tests involve the extent to which the outcome space is seen to be useful or meaningful to the intended audience.

### **Step Three: Interpretation and Synthesis of Data**

Next, intense reading, reflection and re-reading fostered a deeper relationship with the studies and their findings; as did drafting a detailed summary (Patton, 2002) and mapping data. A significant block of time was allocated when commencing the interpretative process to assure that once started it continued to a point of stability. Sandberg (2000) specifically outlines phenomenographic interpretation with an eye towards “seeing, seeing it as something, and then interpreting” (Lincoln 2005, p. 242). Up to this point the searching and screening process had involved reviewing each study a minimum of three times; however, a specific focus to minimize investigator interpretation until all studies were gathered. This was for two reasons; first, limiting the investigator’s engagement until the primary data was gathered so that the process of interpretation could, more easily be captured as a discrete process. And second, preventing inclusion of findings, from non-contributing studies screened out earlier.

Now the engagement level with the studies changed. The raw primary data was in a pre-categorized form and needed to be understood within the context of their studies. Deep reading, reflection, and re-reading was done to try and form an understanding and appreciation of what was done along with the outcomes (Sandberg, 2000, Marten, 1996). To this end, the investigator read “systemically” (Sandberg, 2000, p. 13) looking for ‘what’ is the meaning of the phenomenon. Again, each study was looked at from two perspectives, first within study, and then between studies. Once all of the studies were reviewed the process starts anew. This time the investigator looks for ‘how’ the

phenomenon is understood. Again, each study was looked at from two perspectives, first within study, and then between studies. Finally, all studies are reviewed individually “simultaneously focusing” (Sandberg, 2000, p. 13) on both what and how studies understand the phenomenon. The investigator checks the interpretations of meaning by critical comparison until the “most faithful interpretation” (Sandberg, 2000, p. 13) emerges. This iterative process, a hallmark of phenomenography, has been favorably compared to both factor analysis found in quantitative research paradigms and data interpretation in grounded theory (Francis, 1996). Here, the investigator used this process to first understand and then interpret.

### **Categories of Description**

A basic tenet of phenomenography is that findings shall be presented as a set of categories-of-description and finally an outcome space linking the categories to one another. The categories-of-description are constructed from respondent conceptions that emerged through a interview and text analysis process (Marton, 1988). Conceptions have been identified as the “unit of description” (Marton & Pong, 2005) for phenomenographys. The “most essential and distinctive” dimensions, revealed by the conceptions, are identified providing anchors for the forming categories (Marton, 1988, p.147). Categories are considered to emerge, representing and giving voice to all of studies' respondents (Ruona, 2005). In contrast, the outcome space is a hierarchical structure imposed by the investigator to frame the categories in some way (Marton 1988). As qualitative data interpretation is informed by the investigator's perspective (Ruona, 2005); here the less processed form of practitioner work experiences is manifested in categories of description. Therefore, the categories of description are the primary data.

### **Expected Outcomes**

The outcomes for this project were of two levels; first, the primary data gathered from existing phenomenographies; second, the emergent interpretation and synthesis of the gathered primary data.

### **Primary Data**

From existing phenomenographies the expected outcomes, arising from conceptions forming patterns of work meaning, were categories of descriptions. The formed patterns were usually described as a hierarchically related outcome space. Retaining the original voices of the collective respondents, the categories of description were described in prose from the sources (Paterson, Thorne, Canam, & Jillings, 2001; Sandelowski & Barroso, 2007). Other findings such as focus of study, respondent group details along with any other information that informs the interpretation will be considered findings.

### **Interpretation and Meta-Synthesis**

It is assumed that humans make meaning of phenomena in a finite number of ways (Maxwell, 2012; Marton, 1996; Paterson, Thorne, Canam, & Jillings, 2001). Therefore this interpretation included a limited number of patterns, grounded in the dimensions of the phenomenon, which emerged from the primary data. As the study had figures that displayed the patterns of the findings, these inspire visual representations of the emergent patterns. Lincoln (2005) describes phenomenographies as “pattern theories” (p. 228) that draw us to particular elements in related systems. The goal here was to “prompt” a systemic view of work occupation that is “unified, interconnected and holistic” (Lincoln, 2005, p. 228) linking various phenomenon dimensions. Therefore, the

salient outcomes of this work were more likely to be descriptions and figures of the system representing the salient, emergent features of the studied work occupation.

### **Instruments**

Meta-study considers the investigator as the instrument for gathering, interpreting, and synthesizing cases (Paterson, Thorne, Canam & Jillings, 2001). To assure the value of knowledge created here, step-by-step descriptions of the methods used by the investigator to discover and then check interpretations occurred throughout the study (Sandberg, 1996). To reveal investigator bias reflexivity was built into the investigation process by the active use of two tools (Paterson, Thorne, Canam & Jillings, 2001; Ruona; 2005; Sandelowski & Barroso, 2007); a personal statement of subjectivity, and an investigator's journal.

The statement explains in detail the investigator's background and position on knowledge creation. Its evolution over the time of this study was documented also, along with the processes of transformation as best captured. The journal facilitated an active reflection process through writing and reflecting. In this way the sources of investigator bias affecting the research were identified. Both of these methods were intended to improve the quality of the outcomes of this project.

### **Quality of Evidence**

The intended outcome of this study was knowledge that was authentic and trustworthy (Lincoln & Guba, 1985; Patton, 2002; Sandberg, 1996). Of critical importance to knowledge claims is the quality of the evidence that supports such claims. This project, as meta-synthesis of various cases, had two levels of quality to consider. First, the initial studies used phenomenographic standards for evidence quality cases

(Creswell, 1998). While early phenomenographic literature focused on evidence quality

from a positivistic view, this has since evolved (Creswell 1998; Marton, 1992, 1996;

Patton, 2002; Sandberg, 1996, 2000). The evidence claim of each study was reviewed

and documented during the case selection process. Second, within a meta-study

framework, the results from the gathered cases are considered anew, fresh, and as a

unique data set (Paterson, Thorne, Canam, & Jillings, 2001; Sandelowski & Barroso,

2007). Following a naturalistic inquiry stance, processes fostering trustworthy and

authentic outcomes were followed (Lincoln & Guba, 1985; Patton, 2002).

Trustworthiness is considered to encompass credibility, transferability, dependability, and

confirmability (Lincoln & Guba, 1985).

### **Credibility and Transferability**

The two concepts of credibility and transferability confirm the truthfulness of the

knowledge constructed by naturalistic inquiry and are sometimes compared to internal

and external validity (Patton, 2002). Similarly, Sandberg (2000) organizes his

phenomenographic approach to validity in phenomenography by using two criteria from

Kvale (1989): communicative validity and pragmatic validity. Sandberg (2000) notes that

communicative validity; while pragmatic validity

Polit and Beck (2004) state that credibility is the “soundness of evidence” (p. 36).

This soundness requires an anchored argument that is convincingly linked. Sandberg

(2000) believes that credibility comes out of a continuing conversation that critically

reviews and discusses knowledge claims as an integral part of ongoing investigations.

Related is the idea of how applicable, outside the cases, is the constructed knowledge.



Sandberg notes transferability “involves testing the knowledge produced in action” (p.

14) by an iterative process of constant checking, evaluation, and documentation.

### **Dependability and Confirmability**

Dependability and confirmability are related to “accuracy and consistency” (Polit & Beck, 2004, p. 35) of the outcome, how likely is it that others that experience this same event have the same outcome (Zechmeister, Zechmeister, & Shaughnessy, 2006).

Dependability, as it relates to phenomenography, has been explicated as limited in importance, as the very nature of the discovery process does not always lend itself to replication (Marton, 1996). Sandberg (1996) posits that phenomenographic dependability is directly linked to the ability of the researcher to be aware of their interpretive processes. To aid this, the investigator ought to faithfully document the details of the process. To this end, Patton (2002) suggests reporting in detail on what was done, why it was done, and possible implications to the results by orderly following a set of procedures and processes.

### **Authenticity**

Authenticity involves revealing the investigator's “reflexive consciousness” (Patton, 2002, p. 546) of their positions. One way to do this is for the investigator to be transparent when other knowledge informs the processes, seeking to determine if and how the outcome may be affected (Francis, 1996). Here, active reflection was encouraged by journaling about the experiences of being the investigator, and then reflecting upon what was written. This reflexive process exposed the investigator's preconceptions that may have crept in (Sandberg, 1996). Using different means to perceive each case, or

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study, opened up the investigator to new insight (Patton, 2002; Ruona, 2005; Sandberg, 1996).

### **Ethical Issues**

Because this research study utilized existing results published in the public domain, it falls under "Research Exempt from IRB Committee Review Category 4" (University of Minnesota Institutional Review Board). Utilizing existing published results minimizes concerns around participant privacy and safety, while affording new and exciting possibilities of discovery.

### **Summary**

This work, as a meta-synthesis, relied on findings from already existing published studies to explore adult work occupation development by interpreting and synthesizing data sets from gathered phenomenographies. These data sets were grounded in actual practitioners' experiences and beliefs, thereby giving a non-dualistic first person perspective of a particular work occupation. While this chapter describes the investigative steps, the following chapter will detail the actual discovery process for both the gathered data sets and the synthesized findings. These synthesized findings represent a holistic view of the vocationally salient dimensions, identified by practitioners.

**CHAPTER IV****FINDINGS****Background**

The aim of this study was to explore work development through interpreting, and meta-synthesizing findings from several phenomenographic studies: creating a holistic mosaic of the collective work-experience meanings, practitioner's make. These collective meanings form the categories of descriptions. These categories capture practitioners' voices, representing ways to understand the work occupation. This meta-synthesis relied on existing phenomenographys results for its primary data (Sandelowski & Barroso, 2007).

**Gathering Primary Data****Search and Screen**

The first goal was to gather as large a pool of potential contributing studies as possible. This was done across several steps:

- 1) Searching for potential studies using particular terms, with limited screening; forming the initial pool of potential studies.
- 2) Screening studies for basic criteria; removing those studies that did not fit.
- 3) Sorting studies by work occupations: removing studies of other occupations.
- 4) Affirming studies: excluding studies that do not fit.

While appearing above in linear order, the emergent nature of qualitative research resulted in some fluidity of sequencing and iteration. Early on, studies remained in the pool if they generally fit the criteria, particularly for methodology. This was purposeful to allow a broad inclusion initially, as both systematic sorting and affirmation would

provide repeated opportunities for later screening. An additional series of searches (e.g. citations, citing studies, and author's other investigations) were also completed. These additional searches occurred both as studies were gathered and also after the work occupation of focus was determined.

Only through a thorough search process would it be possible to confirm the number of existing phenomenographic studies relating to work occupations. This search process was grounded in the inclusion criteria outlined in Chapters 2 and 3.

- Methodology is phenomenographically grounded
- Phenomenon of interest is some work occupation
- Study published in a peer reviewed journal

Search terms and databases searched were chosen based upon these criteria. Table 2 'Studies Found by Database Search' displays the actually databases searched. Search terms were: phenomenography, meaning, meaning making, sense making, ways of understanding, vocation, profession, occupation, work, workplace, adult, and development, in various search combinations.

A significant period of time was allocated once screening started, as it was expected that the majority of studies would come from this initial publication database search effort (Sandberg, 2000). This intense period of searching allowed emersion in the work development literature, aiding discovery that continued until reaching saturation (Patton, 2002). Table 2 'Studies Found by Database Search' illustrates searched databases along with a count of studies found in each. Because of data overlaps between some databases, a few show no contributions to the potential pool. This is because any studies discovered were not new. This overlap serendipitously provided an additional

opportunity to search, helping to gather as many potential studies as possible. Sixty-six

potential contributing studies emerged.

Table 2  
*Studies found by Database Search*

<b>Name of Database</b>	<b>New studies</b>
Academic Search Premier	24
Business Search Premier	9
LexisNexis	0
Anthropology Plus	0
PsycINFO	0
PsycARTICLES	0
EdResearch Online	4
Education Source (EBSCOhost)	11
ERIC (access via CSA)	0
Sage Full Text Collection for Education	0
Science Direct	4
Sage Journal Package	13
Sociological Abstracts	0
Web of Science	0
Gale Professional Collection	1
<b>Total</b>	<b>66</b>

A significant search effort challenge was aligning with two different criteria, one the topic of research, the other methodological. A purposeful balance was struck between a broad gathering and screening. Initially methodological grounding remained broadly conceived, allowing work occupation development to foreground. Methodological fit would be affirmed later, allowing additional screening opportunities then; rather than fixate on one criterion at the expense of the other at this point in the process. One result was the accumulation of a body of supporting literature very closely relating to the topic. Following the initial database search, eighteen more potential studies were discovered through citation and author reviews. These boosted the potential studies to eighty-four.

Next, the eighty-four studies were sorted into occupational sets. While the next goal was to determine the work occupation of focus, the potential studies were also screened for methodological fit. While not initially noted as a screening step, screening occurred as the sorting was done. This was a firm reminder of the need to be flexible in this iterative process. Once completed, twenty-nine potential studies were eliminated. Then, eleven potential studies were placed under 'miscellaneous' as only one or two studies were found per representing occupation. These miscellaneous occupations related to finance, management, library science, and childcare. The remaining forty-four sorted handily into five occupations summarized in Table 3 'Work Occupations Studied'. These five were teacher, practitioner-teacher, designer, researcher, and a variety of healthcare occupations.

Table 3  
*Work Occupations Studied*

<b>Work Occupation</b>	<b>Potential Study</b>
Teaching	15
Practitioner - Teacher	2
Design	9
Researcher	8
Healthcare	10
Miscellaneous	11
<b>Totals</b>	<b>74</b>

It was quickly evident the most represented occupation was teaching, particularly post-secondary teaching. Further review of teaching showed a wide range of investigative views as displayed in Table 4 'Teaching Occupation Studies: Title and Aim'. Looking over these perspectives helped ground the interpretations of practitioner conceptions as the original data was gathered from a certain point of view of teaching. A significant

body of studies was anchored in healthcare, but across several work occupations (e.g.

physical therapy, nursing, anesthetists, and veterinary medicine). In the case of

anesthetists the same research team contributed three investigations, developing a closely related body of work around this profession as each study took a different perspective.

Screening by teaching brought the potential study pool to fifteen.

Once the work occupation of teaching was identified, additional iterations of citation and authors' work searches were completed. Six additional studies were found, however, only one was realized from a new author. The five others, from existing authors, were rather quickly found to lack publication quality, or were duplications of findings. The study added is Lamas, Levy, Paraskakis, and Webber (2012). Once the possible contributing studies were selected, as much time as needed was taken to fully understand each case separately (Paterson, Thorne, Canam & Jillings, 2001; Patton, 2002; Sandelowski & Barroso, 2007). Intense reading, reflection, summarizing, and re-reading fostered a deeper relationship with the studies and their data (Patton, 2001). This deep reading not only realized better understanding of the research processes followed, but also facilitated a better grasp of each study's specific findings.

As phenomenography is grounded in discovering the various ways that a phenomenon is interpreted, duplications of identical ways is a redundancy. Unlike some methodologies, result duplications do not improve the quality of phenomenographic findings. Instead, the broadest variety of perspectives is sought. Therefore, screening for duplication of findings was completed prior to interpretation.

Table 4  
*Teaching Occupation Studies: Title and Purpose*

Authors	Study Title	Stated Aim
Pratt	Conceptions of Teaching	"Adult educators" understanding of what it means to 'teach'; "how the teaching of adults is broadly understood across several societies"
Dall'Alba	The role of teaching in higher education: Enabling students to enter a field of study and practice	To 'elicit the teachers' own ways of experiencing teaching in its many aspects'; "qualitatively different ways in which teachers experienced their teaching role": occupational development
Prosser et al.	A phenomenographic study of academics' conceptions of science learning and teaching	"The way university teachers conceive of learning and teaching and how this relates to the way they approach their teaching"
Trigwell et al.	Qualitative differences in approaches to teaching first year	"The way university teachers conceive of learning and teaching and how this relates to the way they approach their teaching"
Koballa et al.	Prospective gymnasium teachers' conceptions of chemistry learning and teaching	When entering the occupation, "gymnasium teachers' conceptions of learning and teaching"
Åkerlind	A new dimension to understanding university teaching	Ways that academics understand university teaching
Prosser et al.	Academics' experiences of understanding of their subject matter and the relationship of this to their experiences of teaching	How experienced University academic staff experience the understanding of their subject matter', and how that links to their teaching
Parpala & Lindblom-Ylänne	University teachers' conceptions of good teaching in the units of high-quality education	To better understand how experienced faculty in higher education design and develop the courses they teach
Ziegenfuss	A phenomenographic analysis of course design in the academy	To better understand how experienced faculty in higher education design and develop the courses they teach
Gonzalez	What do university teachers think eLearning is good for in their teaching?	University teachers experiences with eLearning across a variety of disciplines
Lameras et al.	Blended university teaching using virtual learning environments: conceptions and approaches	Conceptions of teaching, from university computer science teachers, using VLE (Virtual learning environments)
Goh	Conceptions of competency: A phenomenographic investigation of beginning teachers in Malaysia	What do beginning (1 to 3 years experience) K- 12 teachers conceive and understand as occupational competence



One particular situation arose with a group of contributing studies that shared author(s). This group of studies was looked at closely assuring each study contributed something new. Four studies, Prosser, Trigwell and Taylor (1994); Trigwell, Prosser and Taylor (1994); Prosser, Martin, Trigwell, Ramsden and Lueckenhause (2005); and Trigwell, Prosser, Martin and Ramsden (2005); represented a closely related body of work. Until deeper engagement, each study appeared to contribute; when better-understood Trigwell et al., (2005) was eliminated because of its' duplication of data.

In addition, two other studies, Boulton-Lewis et al. (2001) and Roberts (2003) were closely reviewed because of their methodology. In the case of both of these studies, mixed methodologies of research were used, with phenomenography appearing as some part of larger projects. In the case of Boulton-Lewis et al., categories of description matched word for word those of others' work (Trigwell et al 1994; Prosser et al. 1994). Therefore, it was assumed these findings were not emergent in nature. As their original data was applied to the "category that was most typical" from other work, the findings offered nothing new and so were excluded. Similarly, Roberts (2003) used existing frameworks (Kember & Kwan, 2000) for data from a small respondent group (7), with an intention to link data to 'Networked learning' theory. Once again, this structuring of the limited findings offered nothing new so they were also screened out. Twelve studies remained contributing primary data illustrated in Table 4 'Teaching Occupation Studies: Title and Aim'. With this final screening completed, affirmation of methodological fit proceeded.

Each study was closely examined to confirm its fit to phenomenographic methodology. This affirmed the similarity of the underlying ontological and epistemological perspective of all studies contributing primary data (Creswell, 1998). For this purpose the fourteen touch points of phenomenographic methodology quality were used (see Chapter 3 for discussion). Each study's fit to these 14 touch points are provided in Appendix 1 (p.110), Table A1 'Qualities of Primary Studies'.

In addition to the methodological affirmation the basic unit of analysis, for each study was reviewed. The basic unit of analysis in phenomenography is the conception (Marton & Pong, 2005); emerging, these represent and give voice to all respondents (Ruona, 2005). The "most essential and distinctive" aspects of the phenomenon are revealed by the conceptions, framing categories (Marton, 1988, p. 147). A compilation of each study's definition of conception, the unit of analysis, is displayed in Table 5 'Investigator's Definitions of Conception'. This is particularly interesting as verification that the definition is similar across most studies. And, provides synonyms used and a richer explanation of conceptions as we move through the interpretation. With the completion of searching and screening, summarizing the primary data proceeded.

Table 5  
*Investigators' Definitions of Conception*

Definition of conception, the unit of phenomenographic analysis	Authors	Year
"Conceptions are specific meanings attached to phenomena, which then mediate our response to situations involving those phenomena. We form conceptions of virtually every aspect of our perceived world, and in so doing, use those abstract representations to delimit something from, and relate it to, other aspects of our world. In effect, we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world" p. 204	Pratt	1992
Not mentioned	Dall'Alba	1993
"The phenomenographic procedure involves the "discovery" of a range of qualitatively different categories of descriptions or conceptualizations. These conceptualizations are depicted as being relational. That is, "a person's experience is strongly influenced by their intentions and that the context in which the phenomena are embedded, in turn, influence the experience." P.76	Trigwell, Prosser, Taylor	1994
Quoting Marton (1988) as "a research specialization to study the different understandings or conceptions of phenomena in the world around us" These conceptions are depicted as being relational." P.218	Prosser, Trigwell, Taylor	1994
"In this work, conception was defined as 'a qualitatively distinct manner in which the subjects were found to voice the ways they thought about learning [and teaching], whether in respect to themselves, their reflections over their progress, or any other expression' (Marton and Booth 1997: 36). Conception was used to describe categories of description that highlight the salient features of a group of individuals. Variation was expected to be found among the prospective teachers' conceptions of learning and teaching chemistry and in the relationships between conceptions of learning and teaching." P.211	Kobolla, Et al	2000
Conceptions are specific meanings attached to phenomena, which then mediate our response to situations involving those phenomena. We form conceptions of virtually every aspect of our perceived world, and in so doing, use those abstract representations to delimit something from, and relate it to, other aspects of our world. In effect, we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world (Pratt, 1992, p. 204).	Roberts	2003
"As is common with phenomenographic research, I use terms such as experience, awareness, meanings, conceptions, understandings, perceptions, views, etc., interchangeably." P.374	Åkerlind	2004
Teachers experience and understanding of their specialization; discipline, subject matter, knowledge	Prosser, Martin, Trigwell, Ramsden, Gillian	2005
While not specifically defined, usage indicates – conception: a way of thinking	Ziegenfuss	2007
While not specifically defined, usage indicates – "their world views or conceptions of the phenomena" p.365	Parpala & Lindblom-Ylänne	2007
Not defined: But used repeatedly	Gonzalez	2010
Not defined: But used repeatedly	Lameras	2012
While not specifically defined, usage indicates – understanding of the phenomenon: But used repeatedly	Goh	2013

The final data sets from contributing studies have the following attributes: All of the study respondents teach post-secondary university except for Pratt (1992), Koballa et al (2000) and Goh (2013). Respondents of these three studies have a learner population of adults, gymnasium students, or K-12, respectively. All of the study respondents were situated within a traditional classroom setting except for Pratt (1992), Gonzalez (2010), and Lameris (2012). Gonzalez and Lameris in particular focused on a teaching context blended or fully online, while Pratt's work with adults occurred across a variety of settings.

### **Primary Data Summary**

The primary data from twelve contributing studies, summarized in sixty-one categories of description, capture different ways that teaching practitioners understand their work. Along with the categories of description, two other data sets directly informed the interpretation and synthesis. These were a) study's stated aim and b) respondent information. These are displayed in Table 4 'Teaching Occupation Studies: Title and Aim', and Table 6 'Practitioner Demographics'. A study's purpose illustrates the aim of the research project. For example, here every contributing study's published aim included at least one of the terms: *conception*, *conceive*, *understand*, *experience*, *way*. While the respondent information enriches the voices represented. For example, the respondent population selected by Pratt (1992), purposefully crosses several societies because one project goal was to compare and contrast ideas of teaching between social groups. Interestingly, very little difference was actually found. Additional information like this contextualized the data allowing for a richer interpretation.

The most important primary data, the categories of description, were streamlined, compiled and are presented by study, in Table 7 'Complied Categories of Description'. These categories of description, taken as a whole, are the findings from the contributing phenomenographic studies. These, along with supporting text were used as the primary data here. An additional version of this data maintains the original format and flavor of each study can be found in Appendix 2 (p.122), Table A2 'Categories of Description: Original Formatting', and includes the study's outcome space if constructed and provided. This overview of the raw data shows the different approaches used to describe the findings for each study, along with additional points of interest depending on the study. For example, Pratt's (1992) raw data includes figures of systemic-models for each category of description.

Table 6

*Practitioner Demographics*

Description of Practitioners	Learner Level	Discipline	Country	Authors	Year
Teachers of adults; 5 cultures, PRC, CA, HK Singapore, USA	Adults	Not specified	Canada China	Pratt	1992
Higher education at the first or second year undergraduate level, also most taught higher levels	University	Chemistry Physics	Australia	Dall'Alba	1993
First year university course	University	Chemistry Physics	Australia	Trigwell et al.	1994
First year university course	University	Chemistry Physics	Australia	Prosser et al.	1994
Recent graduates from a "university's chemistry teaching education program" not yet with professional positions	Gymnasium	Chemistry	Germany	Koballa, et al	2000
Modern Scottish university staff	University	Economics, HRM, marketing, management	UK	Roberts	2003
Traditional research based academics with both teaching and research appointments	University	Social, Information and Natural Sciences Languages	Australia	Åkerlind	2004
Academics from four broad fields of study; several years teaching, first year topic	University	Social Sciences Humanities, Business, Law, Life & Health	Australia	Prosser et al.	2005
23 discipline diverse faculty from Widener University that vary by experiences	University	Diverse; otherwise not given	USA	Ziegenfuss	2007
Teachers from one of four quality units (disciplines)	University	Theology, medicine, language, political science	Finland	Parpala & Lindblom- Ylänne	2007
University teachers research intensive schools; "variation in experience was sought"; used eLearning within the last year	University	Law, Science, counseling, social science, business	Chile'	Gonzalez	2010
Computer science teachers from 6 different institutions; undergrad and grad	University	Computer Science	Greece	Lameras	2012
18 of a cohort of 35 graduate teachers; worked three years or less	K- 12	General	Malaysia	Goh	2013

Table 7

*Complied Categories of Description*

<b>Authors</b>	<b>Categories of Description</b>
Pratt	Engineering Apprenticeship Developmental Nurturing Social reform
Dall'Alba	Body of Knowledge and Skills Concepts and Principles to Which Knowledge and Skills are Linked Experiences of a Field of Study and Practice (p.307)
Trigwell et al.	Interaction strategy: intention of transmitting information to students Interaction strategy: intention that students acquire the concepts of the discipline Interaction strategy: teacher and student interaction with the intention that students acquire concepts of discipline Interaction strategy: student-focused aimed at students developing their conceptions Interaction strategy: student-focused aimed at students changing their conceptions
Prosser et al.	Learning as Accumulating More Information to Satisfy External Demands Learning as Acquiring Concepts to Satisfy External Demands Learning as Acquiring Concepts to Satisfy Internal Demands Learning as Conceptual Development to Satisfy Internal Demands Learning as Conceptual Change to Satisfy Internal Demands
Koballa et al.	Learning Chemistry is gaining chemical knowledge from credible sources Learning Chemistry is solving chemical problems Learning Chemistry is constructing personal understanding Chemistry is best taught by transferring chemical knowledge from teacher to pupils Chemistry is best taught by posing chemical problems for pupils to solve Chemistry is best taught by interacting with pupils
Åkerlind	Teacher transmission focused experience Teacher–student relations focused experience Student engagement focused experience Student learning focused experience

Prosser et al.	Teachers' experiences of their understanding of the subject matter taught in the topic Teachers' experiences of teaching and learning in the topic Teachers' experiences of the object of study constituted in the topic
Ziegenfuss	Course design as a roadmap for teaching Experiential-based course design Process-based course design Course design as a sequence or progression Audience focused course design Outcomes based design Curriculum based course design Topics based course design Content focused course design Textbook framed course design
Parpala et al.	Teaching practice: interaction (in a small group) Teaching practice: putting teaching into a larger context Teaching practice: variety in teaching methods Teaching Context Teacher's role 1: Inspiring Teacher's role 2: Expert Student's role 1: Motivated Student's role 2: Processing knowledge The atmosphere The physical environment
Gonzalez	to provide information to students; eLearning as a medium to provide information to students for 'occasional' online communication; eLearning as a medium for 'occasional' online communication for engaging students in online discussions; eLearning as a medium for engaging students in online discussions to support knowledge-building tasks. eLearning as a medium to support knowledge-building tasks
Lameras et al.	information transfer application and clarification of concepts exchange and development of ideas, and resource exploration and sharing collaborative knowledge-creation, and development of process awareness and skills.



Goh	Classroom and Behavior Management (p.4) Knowing Subject Matter (p.5) Understanding Students (p.6) Reaching out for Assistance and Support (p.7) Possessing Values of Professionalism (p.8)
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The text data, in the form of categories, were reviewed re-read and reflected upon in conjunction with the contributing study. Categories are meaningful groupings of practitioners' conceptions of the phenomenon of their work, teaching. The categories represent "dimensions of experience" (Biesta & Burbules, 2003, p. 43) and are composites highlighting a particular set of salient aspects that collectively form the category. Altman and Rogoff (1987) note, "aspects of a whole are not conceived of as involving mutual influences or antecedents-consequence causation. Instead, the different aspects of wholes coexist as intrinsic and inseparable qualities of the whole" (p.25). Identifying and describing the aspects of a phenomenon, contributes directly to describing the whole phenomenon. Therefore, particular sustained effort was made to realize the aspects reflected in each category.

Each category is believed to reflect a minimum of two aspects with some reflecting several, depending on the complexity of the category (Marton, 1986; 1992). To identify the embedded aspects, each category was unpacked. Significantly, patterns of views of aspects are illustrated when different aspect-views are yoked together. Each pattern represents a way teaching practitioners understand their work (Sandberg, 2000; Sandberg & Targama, 2007). To clarify, a practitioner might hold more than one competing view (Pratt, 1992; Marton & Saljo, 1984). The primary text data summarized in sixty-one categories of description (see Table 6 'Compiled Categories of Description', p. 59) were separated so that each category was deconstructed into aspect-views. While earlier the categories were perceived as sets from studies, now the categories were decoupled from one another. This separation, allowed linking of similar aspect-views

across studies. Categories were physically represented on paper, and interpreted as

separate data snips. This encouraged flexibility in relating categories, ease of

manipulation, opening up possible data formations. Initially done by physically forming

groupings, this iterative process, reviewed, reflected upon and then reformed different

groupings until stabilization.

### Framing the data

These emergent, free form groupings, while insightful, pointed out the need to

frame the data for explanatory power. Fortuitously, a contributing study's general

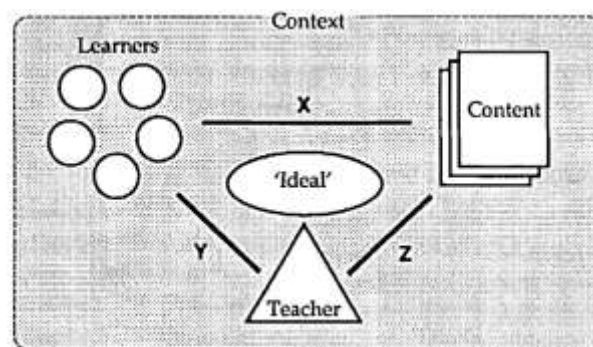
systemic model of the occupation of teaching was suitable for this purpose. Figure 2

'General Model of Teaching', Pratt (1992; p. 205), illustrates the system's significant

aspects: context, aim, teacher, learner, interactions and content.

Figure 2

*Pratt (1992) General Model of Teaching*



This general teaching model identifies six aspects of the phenomenon. These six aspects grounded the deconstruction of categories. While straightforward for the majority of categories, some required more intense review and reflection. Each category's identified aspects are displayed in Table 8 'Categories Deconstructed by Aspect'.

Table 8 shows the categories of description for each contributing study along the

side. These categories are then shown deconstructed by occupation aspects, which are illustrated across the top. Quotes of salient notes and quotes are used to display what aspects are represented along with how each is expressed. It is worth pointing out that the learner aspect reflected from the categories is not what learners actually do, think or believe. Instead these are teaching practitioners conceptions of learners.

Table 8

*Categories Deconstructed by Aspect*

Authors	Categories	Interaction	Teacher/Teaching Practice	Learner/ Learning Process	Aim	What is to be Learned	Context
Pratt	Engineering		Delivery (p. 210)*	Learning is observable and predictable	Education efficiency	Stable and external-to-learner (p. 210)	
	Apprenticeship		Modeling doing and being (p. 211)			Embodied in teacher (p. 212)	Practice
	Developmental	Mentioned briefly	Promote forms of thought and inquiry	Intellect development		Developmental processes	
	Nurturing	Regard (p. 214)	Caring yet challenging, helpful yet directive (p. 214)	Self conception			
	Social reform				A better society		
Dall'Aiba	Body of Knowledge and Skills		Presents (p. 303)	Learner has previous knowledge		Body of "selected" knowledge and skills (p. 299)	
	Concepts and Principles linking Knowledge and Skills		What to teach How to teach What is relevant (p. 304)			"Linking framework" for K/S. "Patterns" (p. 306-7)	
	Experiences of a Field of Study and Practice (p. 307)				Vocational Development (p. 300)	Competent practitioner (p. 299)	
Trigwell et al.	Teacher focused: intention of transmitting information to students	Teacher only Student has "no responsibility" (p. 80)	Transmits atomized facts and skills Teacher "hopes" information is received (p. 80)	Assumes student-learning ability (p. 80). Passive or active (p. 79). No expectation of prior knowledge (p. 79)			
	Teacher focused: intention that students acquire the concepts of the discipline	Teacher only Learner absorbs (p. 80)	Helping (p. 79) acquisition. Telling, showing. Facilitates linking to previous learning (p. 80)	Has previous learning with which to link (p. 80) Passive or active	Learner to recall facts, solve problems, relate concepts, apply concepts to new situations (p. 79)		
	Teacher and student interaction: intention that students acquire concept of discipline	Learner acquire (p. 80)	"Situation" structured by teacher for learner inter-action	Participant in learning. Active engagement and construction with teacher support	Learner to acquire concepts (p. 80)		
	Student-focused: aimed at students developing their conceptions		Help student actively interact (p. 80)	What student does determines what the student learns	Learner development (p. 81)		
	Student-focused: aimed at students changing their conceptions		Help learner processes (p. 82)	Engaged fully in personal growth	Learner to confront and change their world view (p. 81)		
Prosser et al.	Accumulating More Information to Satisfy External Demands			No linking expected "Rote" (p. 220).	Inculcation of "correct way" (p. 221)		
	Acquiring Concepts to Satisfy External Demands			Linking to prior knowledge (p. 221)	Culture Form Developing		

	Demands			221)	Developing culture's significant meaning (p. 221)		
	Acquiring Concepts to Satisfy Internal Demands			Personal meaning making	Acquiring meaning for learner within existing form		
	Conceptual Development to Satisfy Internal Demands			Extending personal meaning making (p. 221)	Developing, restructuring meaning for learner within existing form		
	Conceptual Change to Satisfy Internal Demands			Engaged fully in self construction	"New world view" (p. 222)		
Koballa et al.	Gaining chemical knowledge from credible sources.	Teacher tells	Credible source (p. 215)	Gaining knowledge (passive or active)			
	Solving chemical problems.		Challenge and motivate (p. 216)	Cognitively engaged (p. 217)			
	Constructing personal understanding.			Learner's self construction (p. 217)			
	Transferring chemical knowledge from teacher to pupils.	Teacher tells (p. 217)	Credible source	Correct and accurate knowledge			
	Posing chemical problems for pupils to solve.		Problem posers Model	Students wrestle with problems to solve (p. 217)			
	Interacting with pupils		Forms opportunities (p. 218)	Experimenting Doing			
Åkerlin d	Teacher transmission focused experience	Teacher	Transmits, Presents (p. 367)	Absorbing (p. 367)	Imparting information (p. 367)		
	Teacher-student relations focused experience	Teacher	Outcome: development, job satisfaction (p. 368)	Participant	Promoting relationship (p. 368)		
	Student engagement focused experience	Teacher Learner	Creating active learning opportunities (p. 379)	Engagement	Promoting self-motivation of learner		
	Student learning focused experience	Learner Teacher	Support learners, professional development, teaching practice development	Engaged fully in personal growth	Critical and original thinking, questioning, exploring (p.369)		Classroom as "place to untangle" (p. 369)
Prosser et al.	Understanding subject matter: Facts and techniques		Atomistically portrayed (p. 144)			Facts and techniques	
	Understanding subject matter: Concepts, problems, procedures		Atomistically portrayed (p. 144)			Concepts, issues and procedures	
	Understanding subject matter: Individual elements linked to form a whole		Linked relational internal structure			Concepts, issues and procedures	

	Understanding subject matter: indivisible aspects of a whole		Integral relational <u>internal</u> structure			Concepts, <u>issues</u> and <u>procedures</u>	
	Understanding subject matter: indivisible aspects of a whole		Extended abstract structure			Under-pinning <u>theories</u> and <u>conceptions</u>	
<b>Ziegenfuss</b>	Course design as a roadmap				Program competency (p. 73)		Program Institution Profession
	Process driven course design		Modeling (p. 76)	Participant in learning			
	Learner preparedness course design		Verification of learner preparedness	Scaffolding learners (p. 76)			
	Learner outcome course design			Participant gained outcome			
	Course design within a structure						School, Gov't Agency Profession
<b>Parpala et al.</b>	Interaction (in a small group)		Discussion				
	Putting teaching into a larger context		Situate		Enhance student learning		
	Variety in teaching methods		Variety of methods engage learner				
	Teaching Context (aim)				Student learning (p. 363).		
	Teacher's role 1: Inspiring		Inspiring (p. 363)				
	Teacher's role 2: Expert		Discipline expert (p. 363)				
	Student's role 1: Motivated			Motivated			
	Student's role 2: Processing knowledge			Responsible for an active learning process (p. 364)			
	The atmosphere	Safe, respectful	Encouraging (p. 365)				
	The physical environment						Supportive of learning
<b>Gonzalez</b>	To provide information to students	Teacher	Transmits information (p. 66)		Course Management		
	For medium for 'occasional' online communication	Teacher			Communicate (p. 67)		
	For engaging students in online discussions	Discussion (p. 67)			Engagement		
	To support knowledge-building	Collaboration (p. 68)			Develop certain forms of inquiry		
<b>Lameras et al.</b>	Information transfer and recall		Organizes and transmits information or skills	Recall	Access (p. 145)		
	Application and clarification of concepts	Questioning, practicing (p. 149)	Task Design	Engaged (p.147)	Feedback (p. 147)		Tasks
	Exchange and development of ideas, and resource exploration and sharing	"Open-ended" (p. 147)	Task Design	Negotiate, develop, change (p. 147)	Students explore and express (p. 147)		Tasks
	Collaborative	"Exchange" (p.	Task Design	Collaborating	Professiona		Tasks

	knowledge-creation and development of process awareness and skills	149)		(p.148) Reflecting (p. 149)	l developme nt		
<b>Goh</b>	Classroom and Behavior Management		Management skills to control learners (p. 4)		Benefit learners outcomes (p. 4)		
	Subject Matter & Practice		Discipline and teaching practice knowledge (p. 5)		Teacher Competence		
	Understanding Students		Evaluation of learner preparedness and temperament (p. 6)		Benefit learners outcomes (p. 6)		
	Reaching out for Assistance and Support		Active participation (p. 7)		Teaching support		
	Possessing Values of Professionalism		Various actions (p. 8)		Professional behaviors (p. 8)		

## Findings

We are able to critically examine each aspect examining the data found under each aspect's heading. Of particular interest are the possible modes for each aspect. Findings are organized below following the framing model. However, displaying and discussing the findings for this project poses two challenges. First, how to discuss these findings without imposing a separation between aspects of the whole phenomenon; and second, the multi-modal nature of the aspects emerging from the primary data.

The goal here is to represent the phenomenon as a whole, various practitioner views' of the occupation of teaching. Even though aspects are presented and discussed separately below, aspects are indivisible from the phenomenon. As the aspects coexist we will look at each aspect through foregrounding it within the system, acknowledging the intrinsic wholeness of the phenomenon. With these challenges in mind, interpretation starts with the aim of the phenomenon, then moves to the most complex aspect, interaction, and proceeds through the other aspects in an orderly fashion.



### **Aim**

Various intended aims are revealed by this data within the phenomenon of the work of teaching. Aims are part and parcel of purposive actions (Tolman, 1932). Aim's here over-arch the whole phenomenon. In addition to distal Aims, the data revealed proximal aims, or intentions, reviewed again within interaction. Interestingly, the only place the aim of learning is expressed within the categories is as part of interactions, a local intention rather than an umbrella aim. Pratt (1992) notes both a distal and a proximal view of aim; distal, improving society; proximal, streamlining teaching processes towards efficiency (p. 210). In addition, Ziegenfuss (2007) contributes the aim of "program competency" by the learner (p.73). While Åkerlind (2004) states that two teacher grounded outcomes, professional development and job satisfaction. In summary the modes of aim:

- Distal
  - Societal 'ideal'
- Proximal
  - Educational efficiency                      processes
  - Program competency                        learner
  - Gain specific outcome                      learner
  - Practitioner development                  teacher
  - Work practice satisfaction                teacher

### **Interaction**

Several studies contributed data of teacher interactions (Pratt, 1992; Trigwell et al., 1994; Prosser et al., 1994, Koballa et al., 2000, Åkerlind, 2004; Ziegenfuss, 2007; Lamas et al., 2012). As more than half the studies contributed to this aspect, interactions appear to form a significant focus within a teacher's occupation. The impetus and intention of interactions are the teachers' purvey, with the teacher expecting an outcome. The driving proximal aim of the interaction, the intention, intertwines the learner and teacher in

iterative processes. While iterative, each cycle of the interaction process varies due to the dynamic nature of the activity context.

The desired, or intended, outcome is (mostly) grounded in the learner and projected by the teacher. However, it is possible for learners, or participants (Ziegenfuss, 2007) to specify the intended outcome. One study (Åkerlind, 2004) mentioned two teacher grounded outcomes, professional development and job satisfaction. Not directly intended by the teacher these outcomes emerge out of the experiencing of the phenomenon.

Interactions, the space where intentions and outcomes of teacher and learner are woven together, form patterns. In an effort to reveal these patterns, aspects are interpreted as a whole. Table 9 'Teaching Practice Interaction Patterns' displays the range of intentions within teaching practice interactions, the teacher yoked actions and the teacher's expected learner outcome. The teacher purposefully generates an interaction mode that yokes intention with action towards a desired learner outcome. Interaction is explained as having both an underpinning proximal aim, or intent, and an expected outcome. Both the intention and outcome are directed (mostly) outside of the teacher (Trigwell et al., 1994; Prosser et al., 1994; Pratt 1992). For example, a learning opportunity (task design) can be intended to facilitate various intentions such as:

- Forming a learning feedback loop determining learner preparedness
- Powering student actions
- Exploring and then expressing learner's findings
- Developing within discipline, or profession

Table 9  
*Teaching Practice Interaction Patterns*

Teacher's intentions	Actions	Expected learner outcomes
Access to whatever (Lameras et al.p.145)	Organizes and transmits information or skills (Lameras et al.)	Recalling Lameras et al.
Imparting information (Åkerlind p.367)	Transmits (Åkerlind p.367)	Absorbing (Åkerlind p.367)
Gaining correct and accurate knowledge	Credible source (Koballa et al.p.215)	Learner maybe passive or active (Koballa et al.)
Inculcation of "correct way" (Prosser et al.1994 p.221)		No linking expected "Rote" (Prosser et al.1994, p.220).
Developing culture's significant meaning (Prosser et al., 1994, p.221)		Linking to prior knowledge (Prosser et al.1994, p.221)
Promoting relationship (Åkerlind p.368)	Outcome: development, job satisfaction (Åkerlind p.368)	Participating (Åkerlind)
Verification of learner preparedness (Ziegenfuss)	Scaffolding learners (Ziegenfuss p.76)	
Feedback (Lameras et al.p.147)	Task Design (Lameras et al.)	Engaged (Lameras et al.p.147) Questioning, practicing (p.149)
Promoting self-motivation of learner (Åkerlind)	Creating active learning opportunities (Åkerlind p. 379)	Engaging Åkerlind
Learner development (Trigwell et al. p.81)	Help student actively interact (Trigwell et al.	What student does determines what student learns (Trigwell et al.)
Promoting learning related developmental processes	Teacher interacts promoting forms of thought and inquiry (Pratt)	Intellect development (Pratt)
Challenge and motivate (Koballa et al.p.216)		Cognitively engaged (Koballa et al.p.217)
	Modeling (Ziegenfuss p.79)	Participant in learning (Ziegenfuss)
Students explore and express (Lameras et al.p.147)	Task Design (Lameras et al.)	Negotiate, develop, change, "Open-ended" (Lameras et al. p.147)
	Problem posers, model (Koballa et al.)	Students wrestle with problems to solve (Koballa et al., p. 217)
	Forms opportunities (Koballa et al.p.218)	Experimenting; Doing (Koballa et al.)
	Caring yet challenging, helpful yet directive (Pratt, p.214)	Self conception (Pratt)
Professional development - embodied in teacher (Pratt p.212)	Modeling doing and being (Pratt, p.211)	
Professional development (Lameras et al.)	Task Design (Lameras et al.)	Collaborating (Lameras et al.p.148) Reflecting, exchanging (p.149)
"New world view" (Prosser et al. 1994,p.222)		Engaged fully in self construction (Prosser et al.1994)
	Caring yet challenging, helpful yet directive (Pratt, p.214)	Self conception (Pratt)

The modes of this aspect, while presenting linearly, are not steps, stages or sequences

leading to some choreographed conclusion. Instead they are the expressed combinations of teacher actions and learner outcomes occurring in teaching-learning interactions.

### **Teacher**

While interaction process described above appear foundational to the doing of teaching, being a teacher and all that entails also contributes to the work of teaching. Four distinct modes of the aspect teacher also emerged. These four modes together anchor the practitioner's self, grounding their work:

- A teaching practice
- Teaching practice development
- Current discipline knowledge
- Disciplines' point of view

The ideas of having a teaching practice and continuing to develop it were mentioned but neither was well developed (Goh, 2013; Parpala & Lindbloom-Ylanne 2007; Prosser, et al., 2005). An appreciation for systemic influences limiting in situ teaching processes and desired outcomes were acknowledged (Parpala & Lindbloom-Ylanne, 2007; Pratt, 1992; Ziegenfuss, 2007); in conjunction with acquiring and maintaining discipline expertise (Parpala & Lindbloom-Ylanne, 2007; Pratt 1992). The importance and value of modeling a discipline's viewpoint was brought forward (Parpala & Lindbloom-Ylanne, 2007; Pratt 1992). These four modes of the teacher aspect were described as if contained within the teacher.

### **Learner**

To revisit the point, this data is from the perspective of the teaching practitioner. Prosser et al (1994), Roberts (2003) and Parpala (2007) note the purpose of learning is

often to change existing knowledge internal to the learner. Åkerlind (2004) and Pratt

(1992) both comment about learner self-formation as an outcome of the learning process.

Pratt (1992) adds that learners ought to be able to address “unpredictable and complex situations [with the goal of] greater autonomy” (p.214) with the goal of improving their individual learning outcomes.

In addition an aim of affecting the learner is the focus of several studies. For example Prosser et al, (1994) illustrated two competing learner grounded aims; learning to satisfy an external demand or learning to satisfy an internal demand. External demands relate to learning “objective knowledge” (Prosser et al., 1994, p.221), cultural pressure to accommodate, and an inculcation process. Internal demands are within the learner, self-pressure to form “meaning” (Prosser et al., 1994, p.221), a self-construction process. The first aligns with “generally accepted public knowledge” (Prosser et al., 1994, p.221) or a cultural occupational ‘Form’. While internal demand proceeds the “elaboration” required for the individual’s occupational ‘form’, “producing a new world view” (p.222).

Learner aspect is expected to do, via interactions, what is required to produce the desired outcomes, and also contains the mode of being a learner, and formulating best practices around this:

- Learning: Correct and accurate information, knowledge, concepts, and processes
- Inculcating within a discipline or profession
- Constructing personal discipline knowledge
- Self-constructing: learning autonomy and identity

### **Content, or what is to be learned**

Pratt’s (1992) general teaching model illustrates content, or “what is to be learned” (p.205), as external pre-prepared, static, and contained (e.g. stack of books

icon). The data here expands this aspect beyond that view, in two qualitatively different ways. The first expansion is beyond the fixed, static and containerized view of what is to be learned. And the other expansion is the notion of self-construction processes as what is to be learned. The first, what is to be learned (within the teacher-learner interaction) is described as forming three modes; a) information, knowledge, and skills; and b) concepts, principles and processes; and c) revising, updating or changing. The second are processes of self-construction, the ability to shape behaviors facilitating self-learning.

Finally, Dall'alba (1995) outlines the “intentional” (p.301) development of professional meaning as what ought to be learned, gained, or improved by teacher, learner, or both. For example (Prosser et al 2005), illustrates the possibility that what is learned can be viewed as teacher development around both teaching practice and discipline knowledge.

Summarized together these seven views of what is to be learned are:

- Learner
  - Adding information, knowledge, skills
  - Adding concepts, principles and processes
  - Changing existing information, knowledge, skills, concepts, principles and processes
  - How to learn; processes, strategies, techniques
  - Forming a point-of-view grounded within a discipline or practice
- Teacher:
  - Improving teaching practice
  - Enriching discipline knowledge

Four studies specifically mention the aspect of context, Pratt (1992), Åkerlind (2004), Ziegenfuss (2007), and Lameris (2012). Pratt notes that apprenticeships occur within the context of professional practice, social contexts of discipline practice and professional communities; not physical place, instead where ever practice occurs.

## **Context**

Åkerlind talks about the work of untangling ideas and concepts in the

“classroom”, clearly a physical context. Ziegenfuss (2007) points out that the teaching-learning transaction is situated (e.g. a classroom located within a school, a school within a campus, a campus within an institution, and all within some governance system) both physically and socially. Lamas (2013) finds that tasks are the context, albeit a micro-context, for most learning. Summarized context modes:

- Education setting
- Social governance
- Discipline or profession practice setting
- Discipline or professional communities

### **Summary**

Through an extensive process the work occupation of teaching emerged for interpretation and meta-synthesis. The primary data were the categories of descriptions from twelve phenomenographic studies. Phenomenography reveals the perspective of the person experiencing the phenomenon first hand within an outcome of the collective experiences of the respondents, teaching practitioners. Following the lead of Pratt (1992), a systems representation modeling the practice of teaching was used to frame the aspects of these categories. Systems images allow us to view various aspects and their relationships to other aspects. Taking all of the aspects views and bringing them together Table 10 ‘Summary of Aspect Modes’ displays these interpreted and synthesized findings.

Table 10

*Summary of Aspect Modes***Aim**

Educative 'ideal'	society
Educational efficiency	processes
Program competency	learner
Gain outcome	learner
Practitioner development	teacher
Work practice satisfaction	teacher

**Interaction**

Reference Table 9 'Teaching Practice Interaction Patterns'

**Teacher**

A teaching practice  
 Teaching practice development  
 Current discipline knowledge  
 Disciplines' point of view

**Learner**

Learning: Correct and accurate information, knowledge, concepts, and processes  
 Inculcating within a discipline or profession  
 Constructing personal discipline knowledge  
 Self-constructing: learning autonomy and identity

**What**

Learner  
 Adding information, knowledge, skills  
 Adding concepts, principles and processes  
 Revising/Changing existing information, knowledge, skills, concepts, principles, processes  
  
 How to learn; processes, strategies, techniques  
 Self-Construct Identity  
 Forming a point-of-view grounded within a discipline or practice  
 Teacher:  
 Improving teaching practice  
 Enriching discipline knowledge

**Context**

Education setting  
 Social governance  
 Discipline or profession practice setting  
 Discipline or professional communities



**CHAPTER V****DISCUSSION OF FINDINGS****Introduction**

Sandberg & Targama (2007) posit that meaning making around occupation fuels pursuit and guides development. Furthermore, once knowledge is acquired, constructed, or created, it is one's meaning-making that points to how this knowledge ought to be construed. In contrast, much Human Resource Development (HRD) theory is rooted in EES research anchored within psychology. A key difference in theoretical views is that, rather than assuming the domain's dynamic activity context (DAC) is perceived similarly by participants, here individuals experience the domain's DAC in various ways.

While seeking to answer the research questions an additional layer of complexity emerged that was not addressed initially. The questions ought to have been limited to a particular occupation, and the form conceptions would take was not well explicated. The occupation of focus, emerging from the research process, is (mostly) post-secondary teaching. Because answering the questions required uncovering the conceptions embedded in the categories of descriptions, the categories were deconstructed, unraveled, into salient aspects and aspect-modes that form the DAC of the domain of teaching. Therefore, reference to categories, aspects, and aspect-modalities, are required to explain these findings.

**Research Questions and Discussion of Findings**

*What are the teaching practitioner's categories of description of work gathered from existing phenomenographys?*

The categories of descriptions, the primary data, gathered from the contributing studies have been displayed in two forms; original formatting and summarized,

Formatting' (p.122), and Table 6 'Complied Categories of Description' (p. 59). Both are provided to display the transition from the raw data to that used here. The raw data often includes formatting and categorizing that is streamlined in the compilation. In addition, the illustrations are provided with some of the raw data.

*Do practitioner conceptions relate to activity context?*

Yes, conceptions embed aspects of the activity context of the work of teaching. Table 10 'Summary of Aspect Modes' p. 75, illustrates the relationship between conceptions and the activity context aspects. This was done by identifying the salient aspects of the domain, teaching; and teasing apart the various modalities of each aspect of interest. By so doing it is possible to then illustrate the various ways practitioners understood the salient aspects of the dynamic activity context. This graphic displays how categories of description were deconstructed, along with underpinning text. This table can be used to determine the categories representing particular aspects. And also show the formation of an aspect as represented by the respondents through text.

*Are there variations of practitioner's conceptions gathered from existing phenomenographys?*

Yes, the findings revealed that the DAC could be conceived of differently. These perceived differences occur in two different ways. First, different aspects sets may be perceived as salient. For example, Table 8 'Categories of Description Deconstructed by Aspect' (p. 65) gives a comparison between aspects uncovered, by study. Showing that each study has a different set of aspects, and aspect modes. These revealed aspect modes were embedded within the categories of descriptions formed from the responses of study

participants. Second, even if the same set of aspects are perceived as salient, the

aspectual modes can be different from practitioner to practitioner. In addition, there is every indication that practitioners ought to hold more than one meaning-mode for each aspect. The relationship of dynamic activity context to aspects, and therefore conceptions, is shown in Table 8 'Categories of description deconstructed by aspect' (p. 65).

*What are the synthesized work conceptions for teaching practitioners?*

Work conceptions, by aspect, are synthesized and illustrated in Table 10

'Summary of Aspect Modes' (p. 75) of conceptions from the categories of description.

This table shows each of the aspects along with its modes, or variations of possible ways to understand the aspect.

*What are the similarities and differences within the synthesized conceptions?*

Teaching practitioners conceive of their work in various different ways. Possible different ways are displayed by aspect-modes. An ability to perceive and understand more aspect-modes would support greater expertise. It is posited that practitioners holding all or most of the aspect-modes understand the occupation in more ways than those that do not.

These findings also display ways in which DAC can affect variations of performance, even among experts. One explanation is that different experts have different combinations of aspectual perception and understanding. These differences within the expert-group are believed to arise from each individual having their own personal understandings, or form of the occupation. This personal understanding emerges out of experience.

Occupational Science and Theory explicates a process by which each practitioner acquires, constructs, and creates their personal understanding of the profession. OTOS offers a view of development that reconciles the held inculcated cultural 'Form', via transformation to the individually constructed 'form'. Tension between the cultural 'Form' and an individual's 'form' underlays occupational development. While the notion of moving from the cultural 'Form' to the constructed personal 'form' of an occupation underpins this OTOS theory of development, specific processes are not explicated (Hasselkus, 2011).

However, EES findings reminds us that for some domains DAC aspects may be fundamentally more or less knowable; reflected by domain-inherent reduced-performance-expectations of even the very best performers (e.g. weather predictors). Level of expertise links to how many aspects, and aspect-modes, are sensed and understood. Therefore, knowing the occupation's aspects and aspect-modes ought to be significant information to foster development.

*Are there variations or patterns within the synthesized conceptions?*

Yes, a pattern of variation emerged and is illustrated in Table 9 'Teaching practice interaction patterns' (p. 70). Each pattern represents a way teaching practitioners understand their work (Sandberg, 2000; Sandberg & Targama, 2007). These interaction patterns reinforce the notion of teaching is inherently social. The interaction between teacher and learner is at its core. And that depending on the teacher's intention, the interaction takes on a different mode. As our knowledge around learning advances, a move from the 'acquisition' metaphor to an interactive, engaged 'participation' metaphor is called for (Sfard, 1998). This occupational interaction is participatory in nature, where

the learner is individually evaluated and aided, in moment-by-moment experiences

between the learner and teacher. The teacher actively seeks understanding of where the learner is on a development trajectory (within the DAC and domain) and then facilitates the learner's further development. To be able to do this requires both in the moment evaluative abilities, along with knowledge of the domain's developmental trajectory. The findings here support that notion that expert teachers ought to have the ability to interactively seek out learner understanding and then bridge the learners current position; while the learner builds links and connections are required to claim.

Practitioner intention activates, or points to, the interaction pattern required to achieve the intended outcome or goal. While hierarchical relationships have been postulated as fundamental to organizing the data generated phenomenographically (Merton, 1998; Prosser et al, 1994); here the findings suggest that for the aspect of interaction, interaction patterns are heterarchical. Unlike "structural-development" theories that imply "value judgments" (Kretternauer, 2011. p.75), no set of interaction aspect-modes are inherently privileged. Instead, each interaction aspect-mode has a different aim and outcome, and is called upon by the practitioner, depending on their professional intention.

Shifting between interaction modes supports Ellström (2006) who notes two types of learning, reproductive and development. "Adaptive or reproductive learning has a focus on a subject's adjustment to and mastery of certain specific tasks or situations . . . developmental learning, [is] where the focus is on transforming" (p.34), supporting creativity and innovation. Depending on what type of learning is intended, the appropriate interaction pattern would be called upon to facilitate.

**Summary**

The responses to the research questions confirm that the construct of domain highlights salient aspects of the occupations dynamic activity context. In addition, development is seen as emerging out of experiences within the occupation's dynamic activity context. And finally, social interaction facilitates development.

The findings here reveal that variations in understandings of aspects and aspect modes, forming the DAC, may explain differences in development between practitioners. A teaching practitioner, to be considered an expert, ought to understand all of the aspect-modes that form the domain's dynamic activity context. And finally practitioner intention underpins interaction modes, supporting student learning.

The findings here suggest that limiting a domain's dynamic activity context reduces the number of aspects, or aspect modes, simplifying, reducing what needs to be understood for expertise. This bounding of the DAC facilitates understanding, as less is needed to gain understanding. And this bounding also limits understanding by potentially blocking experience of an aspect, or aspect-mode. Remember, understanding of aspects, and their various aspect-modes, only occurs through experiencing aspectual variations.

In addition to answering the research questions, the two key findings are, first, the detailed explication of the different ways that teaching practitioners can conceive of their work as displayed in Table 10 'summary of aspect modes' (p.75); And second, a practitioner's intended outcome can facilitate selection of the teaching-learning interaction processes that best-fit the goal.

**Limitations**

Because this study uses data produced by other investigators, it is only possible to uncover the conceptions embedded within the category of descriptions as formed by these researchers. However, because of the broad range of studies contributing primary data, if a conception was not included, overlooked, or misinterpreted, it is anticipated that another study fills the gap. No claim is made here that all levels of professional expertise were included in the respondent pools; therefore it is possible that additional aspects, or aspect modes might exist but were not included here. Also, it is likely that additional conceptions of teaching will emerge over time as an occupation advances and society evolves.

The conceptions elicited by the primary study investigators depend on the developmental status of the respondents. None of the contributing studies claimed to compare responses based upon their quality of professional performance. However, we would expect that competent teachers hold a broader range of aspects, and aspect modes. Level of expertise could be determined by what DAC aspects are highlighting. Perhaps what aspects one 'sees' actually limit the practitioner's view of other aspects; or have labeled some aspects incorrectly as not viable or significant.

Investigators of the primary data framed their findings by forming categories of descriptions. Because categories of descriptions are built from the conceptions expressed by the respondents, the investigators would have to be able to identify the aspects, and aspectual modes, expressed by each respondent. If an investigator did not know an aspect mode existed, then it is possible that it would not be correctly identified. Therefore, the investigator's expertise as a teaching practitioner could affect their ability to identify

conceptions. Similarly, this investigator's expertise in teaching would have the same affect on the findings here.

### **Challenges**

The cross-disciplinary nature of this project required linking notions, terms and constructs. While the meta-synthesis aspect allowed for new findings to emerge from previously discovered results. To do this and stay within the boundaries of phenomenography required back tracking, confirming and re-reviews of material through out this project. Determining the important points, and figuring out how to foreground these while working towards a holistic view of development seemed often contradictory. The process followed allowed the data to ground itself so that tensions shifted, evolved and then resolved themselves as the teaching DAC was captured.

In addition, methodological evolution was visible within the contributing studies. Interestingly, the contributing studies form a longitudinal cohort spanning more than 20 years of research; Reference Table 5 'Investigators Definitions of Conception' (p. 56). Looking at the definitions of conceptions across time shows that earlier studies offered a broader description, which has been reduced to a single word in later studies. While this might reflect consolidation of beliefs within the research methodology, what might constitute meanings seems to have been reduced also.

### **Implications for the Future**

The current 'challenge' is how to connect what we know about individuals, within the "social view of learning" (Hodkinson & Hodkinson, 2004, P. 2). Hodkinson & Hodkinson go on to ask, what are the different micro factors, the "particular, localized patterns of social interaction" (p.5) the micro-systems within DAC's that affect learning



findings here are both teaching-learning patterns of interaction, along with the possibility of strategic application of interaction patterns as a way to further teaching practice.

Daniels (2009) proposes:

Different social structures give rise to different modalities of language that have specialized mediational properties. They have arisen, have been shaped by, the social, cultural and historical circumstances in which interpersonal exchanges arise and they in turn shape the thoughts and feelings, the identities and aspirations for action of those engaged in interpersonal exchange in those contexts (p.37).

The special mediational properties of teaching-learning interaction patterns suggests that these patterns are dynamic mediational tools utilized for promoting learning, fluctuating between modes, as required, for best mediation practice.

Interaction modes reflected in 'learning relationships' have been a focus of workplace learning (Rainbird et al, 2004) where organizational levels play a role, (e.g. distal: state, community, organization; and proximal: group, class, dyad). However, there is a difference between social interactions and relationships. Here, the emphasis is on interactions applicable to the practice of the occupation of teaching. Because of the occupational development orientation of this project, recommendations for both practice and research are made below.

### **Recommendations for Practice**

Recommendations for practice are directed towards the individual practitioner, not the collective profession as a whole. The findings here could be used to frame the breathe of the profession, parsing out what occupational aspects are salient in a given teaching specialty, learner population, or other ways to limit the occupational DAC.

Utilizing occupational studies as a guide, a practitioner could reflect on their practice and how it relates to the aspects and aspect-modes presented in Table 10 'Summary of Aspect Modes' (p.75). Identification of both first-person experientially constructed meanings (forms), along with identification of culturally held Forms (Nelson, 1988) of these aspects and aspect modes of the occupation ought to be possible. This identification would point to aspects that have been less developed indicating where development is needed to move the practitioner towards greater expertise.

Here, the findings suggested teacher-learner interactions as a direct way to affect learner outcomes. Depending on the teacher's pre-determined aim, or purpose, different interaction patterns can be utilized as a dynamic tool mediating desired outcomes in the learners. Therefore, understanding the power of different teacher-learner interaction patterns is critical. By verifying one's interaction processes, and confirming an ability to access the pattern that supports the intended outcome, it may be possible to improve the use of these patterns.

Teaching-learning interaction patterns clearly formed a separate space where the different patterns were revealed as the data was processed. At that point purposeful intention emerged guiding interaction strategies. No single respondent was considered to have constructed their own meaning, or form, of all of the revealed aspects. This was particularly evident in the limited responses acknowledging the use of interaction patterns to facilitate teaching outcomes. This would suggest that teaching practitioners in the respondent pool have limited conceptions of interaction patterns and processes to support practice. Therefore, particular development ought to be directed towards skill-building around strategic usage of interaction patterns to support learner outcomes.

**Recommendations for Research**

Possibilities for future research focus on teaching-learning interaction patterns, however, one other area will be mentioned briefly first. The findings here included teacher's conceptions of learners and their learning processes. Because of the number of phenomenographic studies that focus on learner's conceptions of learning, it ought to be possible to juxtapose teacher's conceptions of the learner, with learner conceptions of being a learner. This would confirm similarities, but more importantly point out critical differences in how learner and learning are interpreted depending on one's position in the learning-teaching transaction.

While social interaction has been considered important for learning (Vygotski, 1978; Lave and Wenger, 1991; Daniels, 2009); the notion that intention guides a competent teacher to access and utilize specific interaction patterns as a tool to achieve learning outcomes is not well explicate (Roth, 2009). Three areas of closely related work could be applied to further theory building extending these findings: discourse studies: analysis and genres, and pedagogical interactions.

**Discourse Studies****Analysis**

Discourse studies include both discourse analysis and discourse genres. Schiffrin (2001) posits that discourse is an "interactive process" (p.54) of communication requiring abilities to express, to socialize, and to represent concepts and ideas via language.

Discourse analysis in the form of multimodal discourse analysis (MDA) "extends the study of language per se to the study of language in combination with other resources, such as images, scientific symbolism, gesture, action, music and sound" (O'Halloran,

2011, p.1). MDA represents a broadening to systemic themes. One particular principle is the notion of interaction meta-functions (Iedema, 2003). Three are identified, with one of particular interest, "interpersonal meaning: enactment of social relations" (O'Halloran, p.5). The ideas of incorporating various forms of interaction are appealing here as the teaching-learning DAC has been shown to be richer than simply spoken word or text.

### **Genres**

Discourse genres, "historically specific elements of social practice, whose defining features link them to situated communicative acts" (Hanks, 1987, p. 668) also provides an interesting perspective. An emphasis on social practices and history could address the tension between different teaching interactions, such as 'transmission' or 'construction'. Rather than categorizing one or the other as better, both genres likely fulfill different teaching intentions (Miller, 1984). This is supported by the findings here. "Without abandoning earlier conceptions of genres as 'types' or 'kinds' of discourse, characterized by similarities in content and form, recent analyses focus on tying these linguistic and substantive similarities to regularities in human spheres of activity" (Freedman & Medway, 2003, p.2). The regularities, or patterns, discovered here would each need to be conceived of as a genre. Tying these interactive regularities to the sphere of teaching and learning would fit, however, how genre is conceived appears to be more structured, and less fluid, than these interaction patterns currently appear.

### **Pedagogical Interactions**

Pedagogical interactions theory is another field of study that is similar to multimodal discourse analysis (MDA), but is specific to the social milieu of teaching. In addition it works to determine interaction patterns that promote student learning.

is an essential aspect of student learning, and looked to discover and then analyze pedagogical interactions. This view reminds that interaction is an ongoing dynamic process. We have seen here that each interaction pattern has a different outcome, or purpose. The interactions change depending on the needs of the students. Cox, McIntosh, Terenzini, Reason & Lutovsky Quayle (2010), suggest that faculty found to interact more with learners believe interaction is important for learner success. Their conceptual model differentiates between two forms of interaction, casual and substantive, with movement between these two forms. The findings here appear to extend or refine these ideas, including intention of the interaction, along with different forms of interaction.

### **Network Analysis**

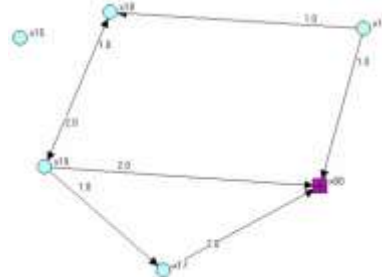
In addition to theory building around interaction patterns, network analysis offers a way to display interaction patterns, showing how they might fluctuate across the span of an event. "Sociograms", a form of interaction diagramming (Knoke & Yang, 2008, p.46) use different designators to indicate social details of interest. General socio-gram notation includes both nodes and lines. Each actor is a node, or circle. These circles can vary in size and density to denote additional information, such as social role, or individual identity. A solid or broken line, linking the nodes, or individuals, illustrates every interaction. Arrowheads of various sizes and styles may be used denoting the direction, intensity, and instigation of interactions. If the interaction is directed from one actor to another, the notation is a directed tie; a single headed arrow points from the actor to the other. If the interaction is dyadic, where both actors choose a close mutual, or reciprocal interaction, the representation could be a single arrow with two heads pointing to both

actors, or two arrows side by side with opposite pointing heads. For example a socio-gram of teaching-learning interactions for a moment in time is shown in Figure 3

‘Example of teaching-learning interaction socio-gram’ (Marcos, J. A., Martinez, A., Dimitriadis, Y., & Anguita, R., 2006, p.3). The round nodes represent students with the square node as the teacher. The arrows, and directional arrowheads note directions of communication.

Figure 3

*Example of teaching-learning interaction socio-gram*



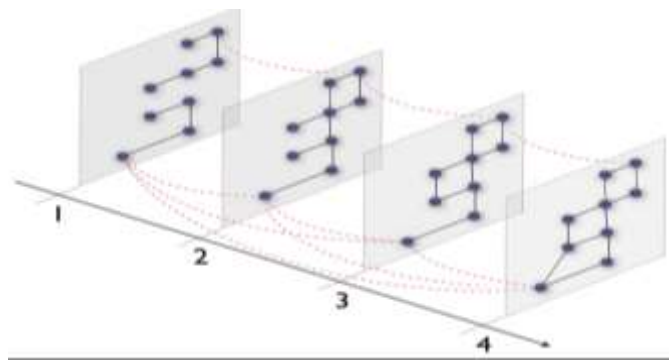
While helpful in revealing details of interactions, sociograms are often interpreted as a fixed way of interacting, as they do not allow for fluctuation over time. Using several socio-grams to display a time series of the different modes of interaction during a teaching session could reveal details of interaction patterns.

It has been noted that interaction patterns over time incorporate multiple forms of interactions involving several micro systems, and various forms of connectivity. And to accommodate, traditional network theory has been expanded to multilayer networks. Applying this work to teaching-learning interaction patterns; “insights about dynamic networks, the dominant paradigm is to study discrete snapshots, or timeslices, as the interactions evolve” (Grindrod & Higham, 2014, p.1). Figure 4 ‘Example of a Time Series of Interaction Patterns’ (<https://amath.unc.edu>, accessed August 26, 2014) illustrates an example of what this might look like. In Figure 4, the ‘1’ through ‘4’

designate four contiguous periods of time. Each period has a detailed socio-gram, showing the pattern of interaction for that period. This form of illustration could be used to show both how the interaction-patterns might change, across a period of time. Or it could be used to illustrate to a teaching professional the patterns they use.

Figure 4

*Example of a Time Series of Fluxing Interaction Patterns*



## Conclusions

The findings here have confirmed and illustrated the multi-aspectual, multi-modal, socially layered dynamic mosaic of the occupation of teaching as understood by the respondent population for the contributing primary studies. Moving phenomenography into new territory as a “theory of variation” (Pang, 2003, p. 150) incorporated concepts from activity theory. These conceptions offered additional ways to think about DAC’s. To develop within a given DAC and domain, within a given vocation, people must be aware of variation in ways of understanding knowledge in that domain and its related dynamic activity contexts (Bowden & Marton, 1998; Marton & Booth, 1997; Marton, Runesson, & Tsui, 2004; Marton & Pong, 2005).

Deeper understanding of work development requires knowing the different ways practitioners can conceive of the aspects that make up the DAC of their work. Listening to and interpreting the voices of (mostly) post-secondary teaching staff describing their conceptions of doing 'teacher-ing' revealed that meaning appears to reflect some aspect, or combination of aspects, of the dynamic activity context of the occupation of teaching. Aspects interact, influencing each other, and yet function as a whole. Dynamic activity context as a broadly conceived, bounded zone where doing and its outcome occur, incorporates:

- On going social roles and groups: work, home, community
- Emergent relationships: political, economic
- Grounded physical environment; people, other beings and objects

When taken as a whole, the potential scope of a teaching practice is daunting, explaining the inherent complexity of this profession. Without experience in the variations of each aspect, development of ability to perform, or practice, will be limited. Those with more experience and knowledge of the DAC aspects, and aspect-modes, perform more expertly. Therefore, expert teaching-practitioners would be expected to perceive and understand all salient aspects and all of their modes within the DAC's of their occupation.



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## **APPENDICES**

1. Table A1: Quality of Primary Data Studies
2. Table A2: Categories of Description: Original Formatting

Study Title	Conceptions of Teaching
Authors	<b>Pratt</b>
Date	(1988, 1990) 1992
Research objectives	"Adult educators' understanding of what it means to 'teach'"; "how the teaching of adults is broadly understood across several societies"
Respondent group description	Teachers of adults; 5 different cultures, PRC, CA, HK Singapore, USA
Respondent selection process	Not described
Number of Respondents	253
Means of collection	"Conversation" rather than a strict interview
Questions: samples	"How do you know when you are successful in your teaching? "What are you trying to accomplish in your teaching?"
Interviewing skills	"Trial runs" "double checking"
Findings accurate	Transcriptions, assistance,
Familiarization	Iterative readings each with a different focus
Bracketing	"Researcher's task to 'discover and describe'; 'remaining true'; 'cautious not to violate or distort"
Patterns	Pre-set model of 5 elements: content, learner, teacher, purpose, context
Essence of Categories	"Perhaps shaped to fit"
Naming Categories	Already done
Outcome space	Yes
Publication	Adult Education Quarterly
Country	Canada, China
Notes	None
Trustworthiness	"Test for trustworthiness of the findings was that a random selection of the original units of meaning had to be recognizable as belonging to one or more of the final" categories of description
Discipline(s)	Not specified

Study Title	The role of teaching in higher education: Enabling students to enter a field of study and practice
Authors	<b>Dall'Alba</b>
Date	(1991, 1993) 1993
Research objectives	To 'elicit the teachers' own ways of experiencing teaching in its many aspects"; "qualitatively different ways in which teachers experienced their teaching role": teacher vocational development
Respondent group description	Higher education at the first or second year undergraduate level, also most taught higher levels
Respondent selection process	Not described
Number of Respondents	35
Means of collection	Interview and discussion
Questions: samples	Questions around teaching practice: nature of interactions, what the teacher did
Interviewing skills	Not mentioned
Findings accurate	Audio taped; transcribed verbatim
Familiarization	Iterative phenomenographic analysis
Bracketing	Not discussed
Patterns	Three views of course content
Essence of Categories	Around content
Naming Categories	Yes
Outcome space	No
Publication	Learning and Instruction
Country	Australia
Notes	Used 'content' as a global term; development of practitioners; Associated intentions or motives of teacher, rather than just strategies and methods
Trustworthiness	Not mentioned specifically
Discipline(s)	Economics, English literature, medicine, physics

Study Title	A phenomenographic study of academics' conceptions of science learning and teaching
Authors	<b>Prosser, Trigwell and Taylor</b>
Date	1994
Research objectives	"The way university teachers conceive of learning and teaching and how this relates to the way they approach their teaching"
Respondent group description	First year university course
Respondent selection process	Not described
Number of Respondents	24
Means of collection	Interview
Questions: samples	"What do you mean by teaching in this subject?"
Interviewing skills	Not mentioned
Findings accurate	Audio taped; transcribed verbatim
Familiarization	Research team worked together initially
Bracketing	Investigator discussions
Patterns	Classified
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	Learning and Instruction
Country	Australia
Notes	More of a focus in the findings on the "conceptions of learning than on the conceptions of teaching"
Trustworthiness	On going reconstruction of categories until stability
Discipline(s)	Chemistry; Physics

Study Title	Qualitative differences in approaches to teaching first year
Authors	<b>Trigwell, Prosser and Taylor</b>
Date	1994
Research objectives	"The way university teachers conceive of learning and teaching and how this relates to the way they approach their teaching"
Respondent group description	First year university course
Respondent selection process	Not described
Number of Respondents	24
Means of collection	interview
Questions: samples	"Could you describe how you go about your teaching?"
Interviewing skills	Not mentioned
Findings accurate	Audio taped; transcribed verbatim
Familiarization	Research team worked together initially
Bracketing	Investigator discussions
Patterns	"Logical relations"
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	Higher Education
Country	Australia
Notes	Discussion on EdPsy focus of "improvement of strategies" (methods like group discussions, demonstrations, etc.)
Trustworthiness	"Inter-rater reliability" 71% first go and the 92 at the end
Discipline(s)	Chemistry; Physics

Study Title	Prospective gymnasium teachers' conceptions of chemistry learning and teaching
Authors	<b>Koballa, Greaber, Coleman &amp; Kemp</b>
Date	2000
Research objectives	"Describe prospective gymnasium teachers' conceptions of learning and teaching"
Respondent group description	Recent graduates from a "university's chemistry teaching education program" not yet with professional positions
Respondent selection process	Volunteers from one German University graduating class of 11 total, so 9/11 participated
Number of Respondents	9
Means of collection	Semi-structured interviews; a single interviewer/investigator
Questions: samples	"How do prospective chemistry teachers conceptualize chemistry learning and chemistry teaching?"
Interviewing skills	Not mentioned
Findings accurate	Audio taped; transcribed verbatim
Familiarization	Interviews done by the lead investigator,
Bracketing	Acknowledgement of "interpretative process" with investigator's "evidence in the choice of theoretical frameworks"
Patterns	"Clustering"
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	International Journal of Science Education
Country	Germany
Notes	Gymnasium teachers development "consists of two phases" discipline specific (up to 7 years) + 1.5 to 2 years of apprenticeship teacher training
Trustworthiness	"Constraints affecting trustworthiness" language, few participants, limited ability to collect new data or confirm existing data
Discipline(s)	Chemistry

Study Title	A new dimension to understanding university teaching
Authors	<b>Åkerlind</b>
Date	2004
Research objectives	Ways that an academic understands university teaching
Respondent group description	Traditional research based academics with both teaching and research appointments
Respondent selection process	Variation
Number of Respondents	28
Means of collection	Semi-structured
Questions: samples	"What being a teacher meant to them: how they went about teaching;
Interviewing skills	Not mentioned
Findings accurate	Recorded and transcribed verbatim
Familiarization	Iterative
Bracketing	Not mentioned
Patterns	Emergent and logical
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes: plus description
Publication	Teaching in Higher Education
Country	Australia
Notes	Great writer: good descriptions of phenomenography
Trustworthiness	Not mentioned specifically
Discipline(s)	

*Qualities of Primary Data Studies*

Study Title	Academics' experiences of understanding of their subject matter and the relationship of this to their experiences of teaching
Authors	<b>Prosser, Martin, Trigwell, Ramsden and Lueckenhouse</b>
Date	2005
Research objectives	"How academic staff experience the understanding of their subject matter', and how that links to their teaching
Respondent group description	Academics from four broad fields of study; several years teaching, first year topic
Respondent selection process	Not described
Number of Respondents	31
Means of collection	In-depth, semi structured interviews
Questions: samples	"How do you understand (subject area)? How do you see it connect to broader areas?"
Interviewing skills	not mentioned
Findings accurate	"Interview data"
Familiarization	Individual investigators and then as a group
Bracketing	Not mentioned
Patterns	Emergent
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	Instructional Science
Country	Australia & UK
Notes	
Trustworthiness	
Discipline(s)	1) Social Science and humanities, 2) business and law, 3) science and technology, 4) healthcare



*Qualities of Primary Data Studies*

Study Title	University teachers' conceptions of good teaching in the units of high-quality education
Authors	<b>Parpala &amp; Lindblom-Ylänne</b>
Date	2007
Research objectives	Teachers conceptions of quality teaching
Respondent group description	Teachers from one of four quality units (disciplines) Selected by faculty; or because of their "additional pedagogical training" and teaching;
Respondent selection process	also active development of their teaching
Number of Respondents	20
Means of collection	Semi-structured
Questions: samples	Focus on teaching: planning, assessment of learning, what it is like in their department
Interviewing skills	Not mentioned
Findings accurate	Audio taped; transcribed verbatim
Familiarization	Iterative reading for broad dimensions
Bracketing	Not mentioned
Patterns	Emergent
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	Studies in Educational Evaluation
Country	Finland
Notes	The interesting part is the ideal teaching and good teaching vs what I do for teaching; this all links to the role of the teacher which they do a good job of explicating
Trustworthiness	Iterative method
Discipline(s)	Theology, medicine, language, political science

Study Title	A phenomenographic analysis of course design in the academy
Authors	<b>Ziegenfuss</b>
Date	2007
Research objectives	To better understand how faculty in higher education design and develop the courses they teach
Respondent group description	23 discipline diverse faculty from Weidener University that vary by experiences
Respondent selection process	Pool of 45 reduced to 23 via a process of variation along with inclusion of particular disciplines
Number of Respondents	23
Means of collection	Semi-structured interviews
Questions: samples	Not given in study; instead "interviewed about their approaches to course design"
Interviewing skills	Pilot-interviews
Findings accurate	Tape recorded and transcribed
Familiarization	Individual investigator
Bracketing	Discussed
Patterns	Emergent
Essence of Categories	Illustrative quotes
Naming Categories	YES
Outcome space	Y
Publication	Journal of ethnographic & Qualitative Researcher
Country	USA Pennsylvania
Notes	Used Biglan (1973) academic classification cluster category; TGI inventory done by each respondent too
Trustworthiness	Triangulation by having other researchers cross check; content was all verified by the use of course documents
Discipline(s)	

Study Title	What do university teachers think eLearning is good for in their teaching?
Authors	<b>Gonzalez</b>
Date	2010
Research objectives	
Respondent group description	University teachers research intensive schools; "variation in experience was sought"; used eLearning within the last year
Respondent selection process	Invited
Number of Respondents	18
Means of collection	Flexible interviews
Questions: samples	What is eLearning good for in your teaching?
Interviewing skills	Not mentioned
Findings accurate	Not mentioned
Familiarization	Individual investigator
Bracketing	"Open attitude"
Patterns	Emergent
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	Studies in Higher Education
Country	Chile
Notes	
Trustworthiness	Iterative method outlined
Discipline(s)	Law, Science, counseling, social science, business

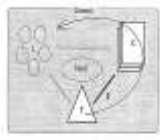

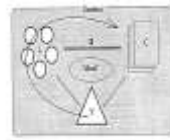
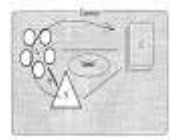

Study Title	Blended university teaching using virtual learning environments: conceptions and approaches
Authors	<b>Lameras, Levy, Paraskakis, Webber</b>
Date	2012
Research objectives	Conceptions of teaching, from computer science teachers, using VLE (Virtual learning environments)
Respondent group description	Computer science teachers from 6 different institutions; both undergrad and grad
Respondent selection process	Not described
Number of Respondents	25
Means of collection	One-to-one interviews
Questions: samples	How do you use VLE? What do you see as the value to VLE?
Interviewing skills	
Findings accurate	Tape-recorded and transcribed verbatim
Familiarization	
Bracketing	"Aim was to avoid imposing a pre-determined set of categories"
Patterns	Emergent
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	Instructional Science
Country	Greece
Notes	Use of Atlas-ti qualitative data analysis software
Trustworthiness	
Discipline(s)	

*Qualities of Primary Data Studies*

Study Title	Conceptions of competency: A phenomenographic investigation of beginning teachers in Malaysia
Authors	<b>Goh</b>
Date	2013
Research objectives	What do beginning teachers conceive and understand as vocational competence
Respondent group description	18 of a cohort of 35 graduate teachers; worked three years or less
Respondent selection process	Volunteers from a cohort
Number of Respondents	18
Means of collection	"In-depth one-to-one interview"
Questions: samples	"How much they understood what constituted competency in teaching"
Interviewing skills	Pilot-interviews
Findings accurate	Voice recordings was transcribed verbatim
Familiarization	Individual investigator
Bracketing	Discussed
Patterns	Emergent, "not pre-determined"
Essence of Categories	Illustrative quotes
Naming Categories	Yes
Outcome space	Yes
Publication	The Qualitative Report
Country	Malaysia
Notes	Questions adjusted after pilot interview - only one that talked about this
Trustworthiness	
Discipline(s)	

Table A2

*Categories of Description: Original Formatting*

Authors	Categories of Descriptions
Pratt	    
Dall'Alba	<p>Course Content as Body of Knowledge and Skills</p> <p>Course Content as Concepts and Principles to Which Knowledge and Skills are Linked</p> <p>Course Content as Experiences of a Field of Study and Practice p.307</p>
Trigwell, Prosser, Taylor	<p><b>Approach A: A teacher-focused strategy with the intention of transmitting information to students.</b></p> <p><b>Approach B: A teacher-focused strategy with the intention that students acquire the concepts of the discipline.</b></p> <p><b>Approach C: A teacher/student interaction strategy with the intention that students acquire the concepts of the discipline.</b></p> <p><b>Approach D: A student-focused strategy aimed at students developing their conception. Approach E: A student-focused strategy aimed at students changing their conceptions.</b></p>
Prosser, Trigwell, Taylor	<p><i>Conception A: Learning as Accumulating More Information to Satisfy External Demands</i></p> <p><i>Conception B: Learning as Acquiring Concepts to Satisfy External Demands</i></p> <p><i>Conception C: Learning as Acquiring Concepts to Satisfy Internal Demands</i></p> <p><i>Conception D: Learning as Conceptual Development to Satisfy Internal Demands</i></p> <p><i>Conception E: Learning as Conceptual Change to Satisfy Internal Demands</i></p>
Koballa, Greaber, Coleman & Kemp	<p><b>Table 1. Prospective teachers' conceptions of learning and teaching chemistry.</b></p> <hr/> <p><i>Conceptions of Learning Chemistry</i></p> <p>LC1. Learning chemistry is gaining of chemical knowledge from credible sources.</p> <p>LC2. Learning in chemistry is solving chemical problems.</p> <p>LC3. Learning chemistry is constructing personal understanding.</p> <p><i>Conceptions of Teaching Chemistry</i></p> <p>TC1. Chemistry is best taught by transferring chemical knowledge from teacher to pupils.</p> <p>TC2. Chemistry is best taught by posing chemical problems for pupils to solve.</p> <p>TC3. Chemistry is best taught by interacting with pupils.</p> <hr/>

Åkerlind	<ul style="list-style-type: none"><li>• a teacher transmission focused experience;</li><li>• a teacher-student relations focused experience;</li><li>• a student engagement focused experience;</li><li>• a student learning focused experience</li></ul>																																	
Prosser, Martin, Trigwell, Ramsden, Gillian	<ol style="list-style-type: none"><li>1. Teachers' experiences of their understanding of the subject matter taught in the topic.</li><li>2. Teachers' experiences of teaching and learning in the topic.</li><li>3. Teachers' experiences of the object of study constituted in the topic.</li></ol>																																	
Parpala & Lindblom-Ylänne	<div>Table 1: The Dimensions in Teaching and in Ideal or Good Teaching</div> <table><tr><th>Dimension</th><th>Number of teachers who mentioned the dimension when describing what is important in their teaching</th><th>Number of teachers who mentioned the dimension when describing ideal and good teaching</th></tr><tr><td>1.1 Teaching practice: interaction (in a small group)</td><td>19</td><td>20</td></tr><tr><td>1.2 Teaching practice: Putting teaching into a larger context</td><td>10</td><td>7</td></tr><tr><td>1.3 Teaching practice: Variety in teaching methods</td><td>4</td><td>6</td></tr><tr><td>2. Teaching context</td><td>10</td><td>7</td></tr><tr><td>3.1 Teacher's role 1: Inspiring</td><td>9</td><td>9</td></tr><tr><td>3.2 Teacher's role 2: Expert</td><td>5</td><td>8</td></tr><tr><td>4.1 Student's role 1: Motivated</td><td>0</td><td>7</td></tr><tr><td>4.2 Student's role 2: Processing knowledge</td><td>3</td><td>4</td></tr><tr><td>5. The atmosphere</td><td>2</td><td>9</td></tr><tr><td>6. The physical environment</td><td>0</td><td>4</td></tr></table>	Dimension	Number of teachers who mentioned the dimension when describing what is important in their teaching	Number of teachers who mentioned the dimension when describing ideal and good teaching	1.1 Teaching practice: interaction (in a small group)	19	20	1.2 Teaching practice: Putting teaching into a larger context	10	7	1.3 Teaching practice: Variety in teaching methods	4	6	2. Teaching context	10	7	3.1 Teacher's role 1: Inspiring	9	9	3.2 Teacher's role 2: Expert	5	8	4.1 Student's role 1: Motivated	0	7	4.2 Student's role 2: Processing knowledge	3	4	5. The atmosphere	2	9	6. The physical environment	0	4
Dimension	Number of teachers who mentioned the dimension when describing what is important in their teaching	Number of teachers who mentioned the dimension when describing ideal and good teaching																																
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4.2 Student's role 2: Processing knowledge	3	4																																
5. The atmosphere	2	9																																
6. The physical environment	0	4																																

Ziegenfuss	<p>1. Course design as a road map for teaching → 1. Course design as a part of a bigger picture</p> <p>2. Experiential-based course design } → 2. Process or sequence-driven course design</p> <p>3. Process-based course design }</p> <p>4. Course design as a sequence or progression }</p> <p>5. Audience-focused course design → 3. Needs-focused course design</p> <p>6. Outcomes-based course design → 4. Outcomes-based course design</p> <p>7. Curriculum-based course design } → 5. Course design within a structure or framework</p> <p>8. Topics-based course design }</p> <p>9. Content-focused course design }</p> <p>10. Textbook-framed course design }</p>
Gonzalez	<p>(A) to provide information to students; <i>eLearning as a medium to provide information to students</i></p> <p>(B) for 'occasional' online communication; <i>eLearning as a medium for 'occasional' online communication</i></p> <p>(C) for engaging students in online discussions; <i>eLearning as a medium for engaging students in online discussions</i></p> <p>(D) to support knowledge-building tasks. <i>eLearning as a medium to support knowledge-building tasks</i></p>
Lameras, Levy, Paraskakis, Webber	<p>(A) information transfer; VLE as a means of supporting information transfer and recall</p> <p>(B) application and clarification of concepts; VLE as a means of supporting application and clarification of concepts</p> <p>(C) exchange and development of ideas, and resource exploration and sharing; VLE as a means of supporting development and exchange of ideas, and resource exploration and sharing</p> <p>(D) collaborative knowledge-creation, and development of process awareness and skills. VLE as a means of supporting collaborative knowledge-creation and development of process awareness and skills</p>
Goh	<p><i>Focus on control</i></p> <p><i>Category 1: Classroom and Behavior Management p.4</i></p> <p><i>Focus on the practice of teaching</i></p> <p><i>Category 2: Knowing Subject Matter p.5</i></p> <p><i>Category 3: Understanding Students p.6</i></p> <p><i>Focus on positive communication</i></p> <p><i>Category 4: Reaching out for Assistance and Support p.7</i></p> <p><i>Focus on becoming a professional teacher</i></p> <p><i>Category 5: Possessing Values of Professionalism p.8</i></p>